SOAP AND CHEMICAL SPECIALTIES

APRIL 1960

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APR 28 1960

Novel product, "Old Holland Beer Shampoo," comes in appropriate, if somewhat unorthodox package, for shampoo that is. A product of Silver-K Corp., Manchester, N. H., shampoo comes in four and seven ounce Anchor-Hocking bottles.

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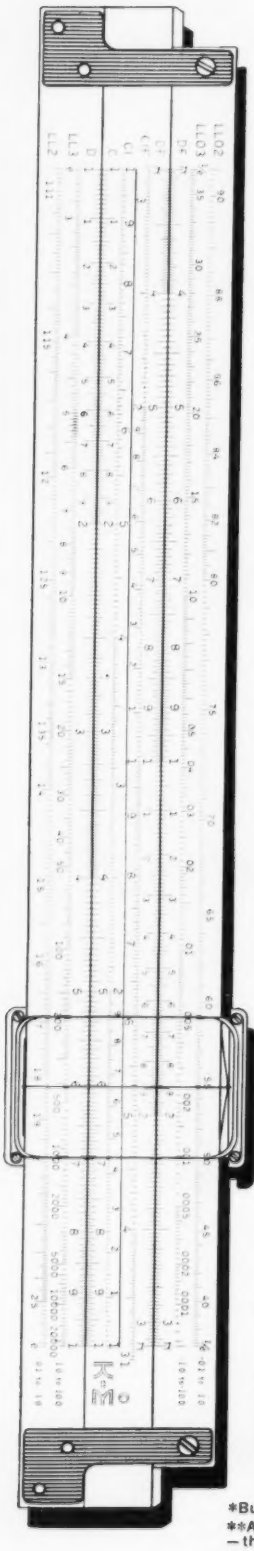

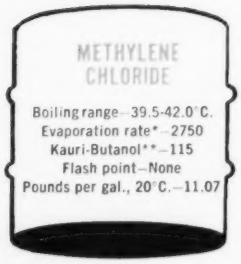

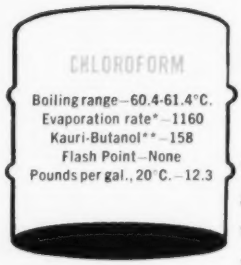

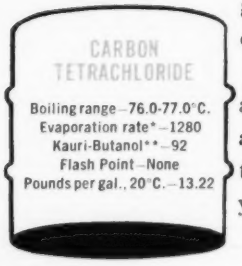

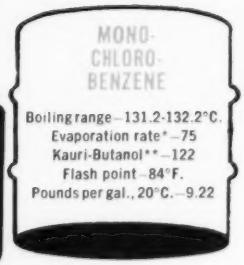

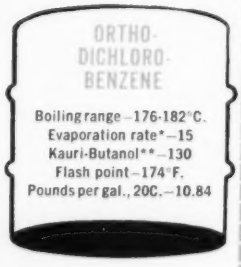

*Butyl Acetate=100.

**A measure of solvent power—the mm. of solvent which can be added to 20 gms. of standard kauri resin solution at 25°C. before the solution turns hazy. Higher numbers usually indicate greater solvent power.

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☐ See attached letter describing my solvents formulation problem.

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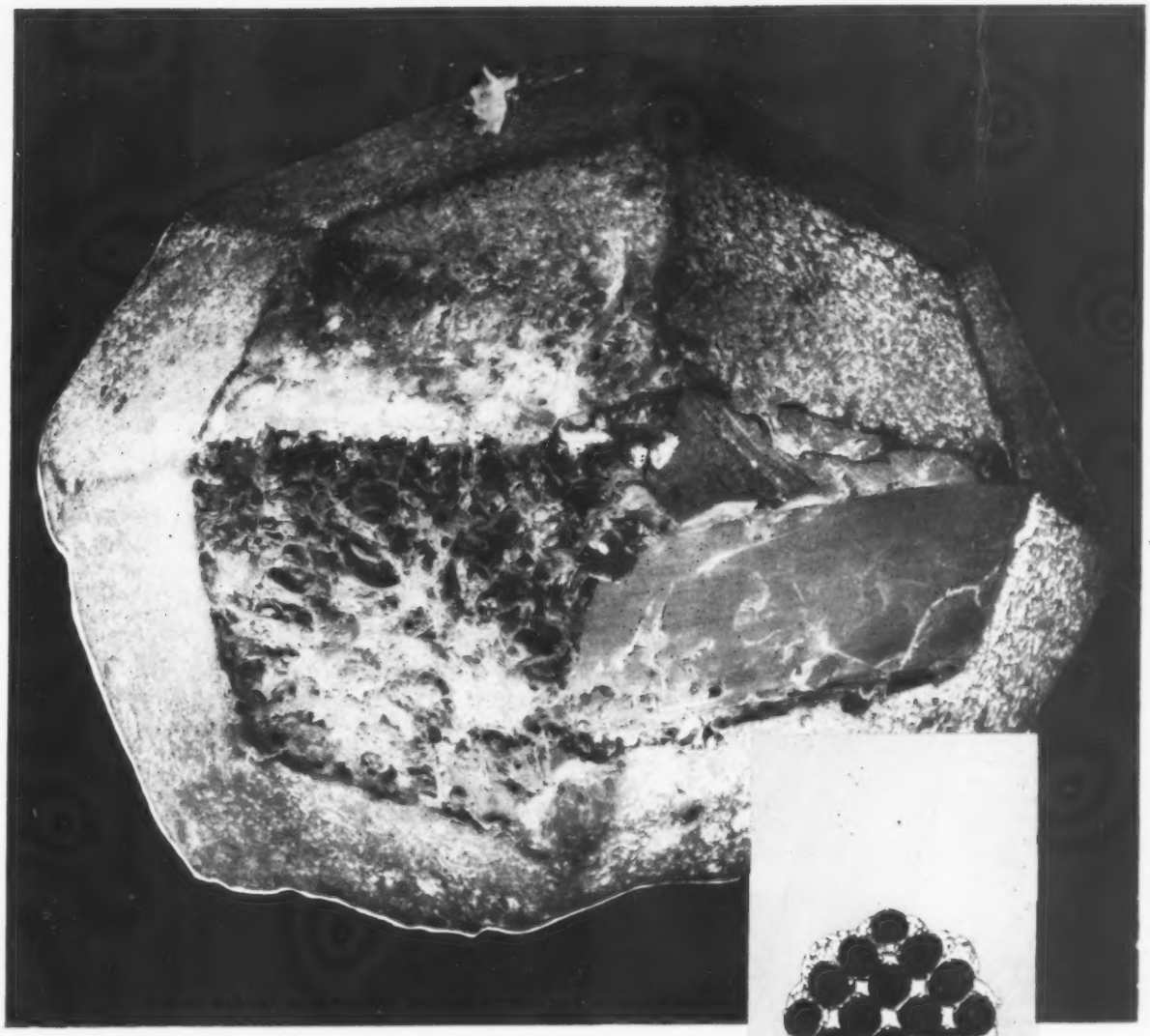

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Each of Candy's floor waxes are all-around top quality for certain traffic conditions. They impart the finest protection and beauty to floors for which best suited.

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CANDY'S SUPREME Special WR
SUPER CAND-DOX®
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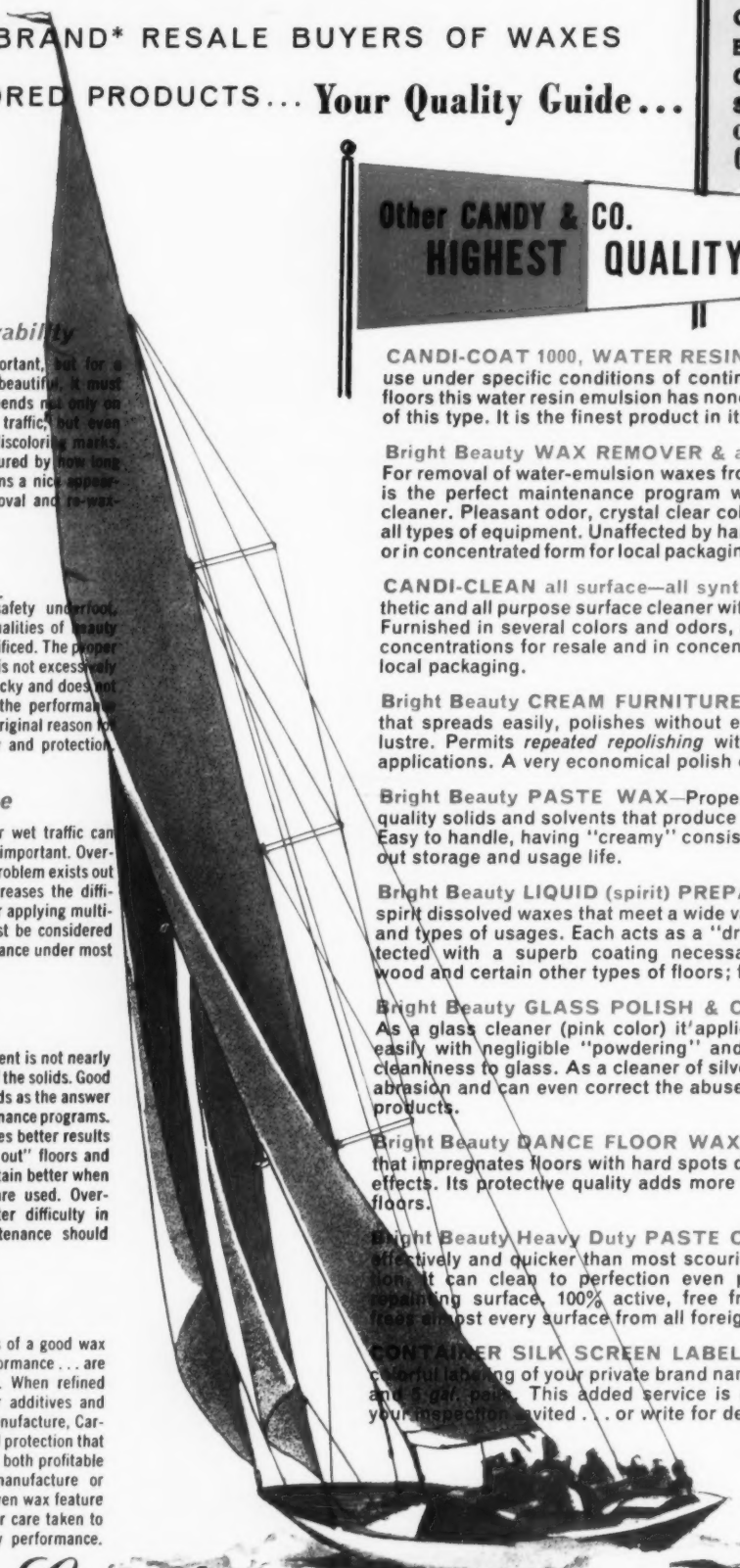
CANDI-WAX #6000

Other CANDY & CO. HIGHEST QUALITY PRODUCTS



Beauty and Durability

Initial appearance is important, but for a waxed surface to remain beautiful, it must be durable. Durability depends not only on resistance to abrasion of traffic, but even more so on resistance to discoloring marks. Durability should be measured by how long the waxed surface maintains a nice appearance before complete removal and re-waxing is required.

Anti-Slip

Anti-slip, or reasonable safety underfoot, does not mean that the qualities of beauty and protection need be sacrificed. The proper balance—a wax film which is not excessively slippery, yet which is not tacky and does not collect dirt readily—gives the performance that answers the foremost original reason for use of a floor wax—beauty and protection.

Water Resistance

Frequent damp mopping or wet traffic can make water resistance very important. Overdoing this quality when no problem exists out of the ordinary, simply increases the difficulty of complete removal or applying multiple coats. Removability must be considered as important as water-resistance under most normal conditions.

Solid Content

The percentage of solid content is not nearly as important as the **quality** of the solids. Good quality indicates 12% of solids as the answer for most well planned maintenance programs. Two applications of 12% gives better results than one of 18%. "Washed out" floors and other special problems maintain better when more concentrated waxes are used. Overwaxing and resultant greater difficulty in removal for periodic maintenance should be avoided.

Carnauba Wax

The most important features of a good wax . . . all-around quality of performance . . . are built around Carnauba Wax. When refined and compounded with other additives and scientifically controlled in manufacture, Carnauba imparts the beauty and protection that makes the use of floor waxes both profitable and possible. Make-shift manufacture or over-emphasis on any one given wax feature should be avoided and proper care taken to provide for most satisfactory performance.

CANDI-COAT 1000, WATER RESIN EMULSION—As a floor coating for use under specific conditions of continued maintenance on certain types of floors this water resin emulsion has none of the faults associated with coatings of this type. It is the finest product in its class produced up to this time.

Bright Beauty WAX REMOVER & all-purpose SURFACE CLEANER—For removal of water-emulsion waxes from any floor without harmful effects. It is the perfect maintenance program wax remover and all-purpose surface cleaner. Pleasant odor, crystal clear color and thorough cleaning action with all types of equipment. Unaffected by hard freezing. Furnished ready for resale or in concentrated form for local packaging . . . nothing but water to buy or mix in.

CANDI-CLEAN all surface—all synthetic CLEANER—This is an all synthetic and all purpose surface cleaner with free rinse and free wipe off qualities. Furnished in several colors and odors, and properly priced. Available in two concentrations for resale and in concentrated form for dilution with water for local packaging.

Bright Beauty CREAM FURNITURE POLISH—A cream furniture polish that spreads easily, polishes without excessive effort to a deep impressive lustre. Permits *repeated repolishing* with a dry cloth, thus saving many re-applications. A very economical polish of the very highest quality.

Bright Beauty PASTE WAX—Properly blended and refined from excellent quality solids and solvents that produce the best drying time and evaporation. Easy to handle, having "creamy" consistency and stability that lasts throughout storage and usage life.

Bright Beauty LIQUID (spirit) PREPARED WAXES—A complete line of spirit dissolved waxes that meet a wide variety of demands for durability, color and types of usages. Each acts as a "dry cleaner" to keep surfaces wax protected with a superb coating necessary for many applications such as wood and certain other types of floors; for bars, wallpaper, etc.

Bright Beauty GLASS POLISH & CLEANER and SILVER POLISH—As a glass cleaner (pink color) it applies evenly with little effort, wipes off easily with negligible "powdering" and produces an undeniable "feel" of cleanliness to glass. As a cleaner of silver, it polishes to a high lustre *without* abrasion and can even correct the abuses of scratchy "quick-polish" inferior products.

Bright Beauty DANCE FLOOR WAX—Does not "ball-up" and gather dirt that impregnates floors with hard spots difficult to remove . . . free from dusty effects. Its protective quality adds more "floor-years" to expensive ballroom floors.

Bright Beauty Heavy Duty PASTE CLEANER—*Cleans* and *scours* more effectively and quicker than most scouring powders. Depending on application, it can clean to perfection even painted walls to provide a suitable repainting surface. 100% active, free from excessive abrasive qualities, it frees almost every surface from all foreign matter.

CONTAINER SILK SCREEN LABELING—Now you can have dramatic, colorful labeling of your private brand name on all 55, 35, 30, 20 & 15 *gal.* drums and 5 *gal.* pails. This added service is accomplished right in our plant . . . your inspection invited . . . or write for details.

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Candy & Company, Inc.

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2515 W. 35th ST., CHICAGO 32

Volume XXXVI, No. 4, April, 1960

Cover photo: Novel product, "Old Holland Beer Shampoo," of Silver-K Corp., Manchester, N. H., is packaged in equally novel, though appropriate bottle. Formula calls for combination of beer, coconut oil and lanolin. Strangely, product has no beer odor. Available in four sizes: four and seven ounces for retail sales, and quarts and gallons for professional use in beauty salons. Amber bottles and yellow molded caps by Anchor-Hocking Glass Corp., Lancaster, O.; labels by Libby Printing Co., Allston, Mass., and gold foil neck band by Reynolds Metals, Richmond, Va.

MEMBER
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SINCE 1934

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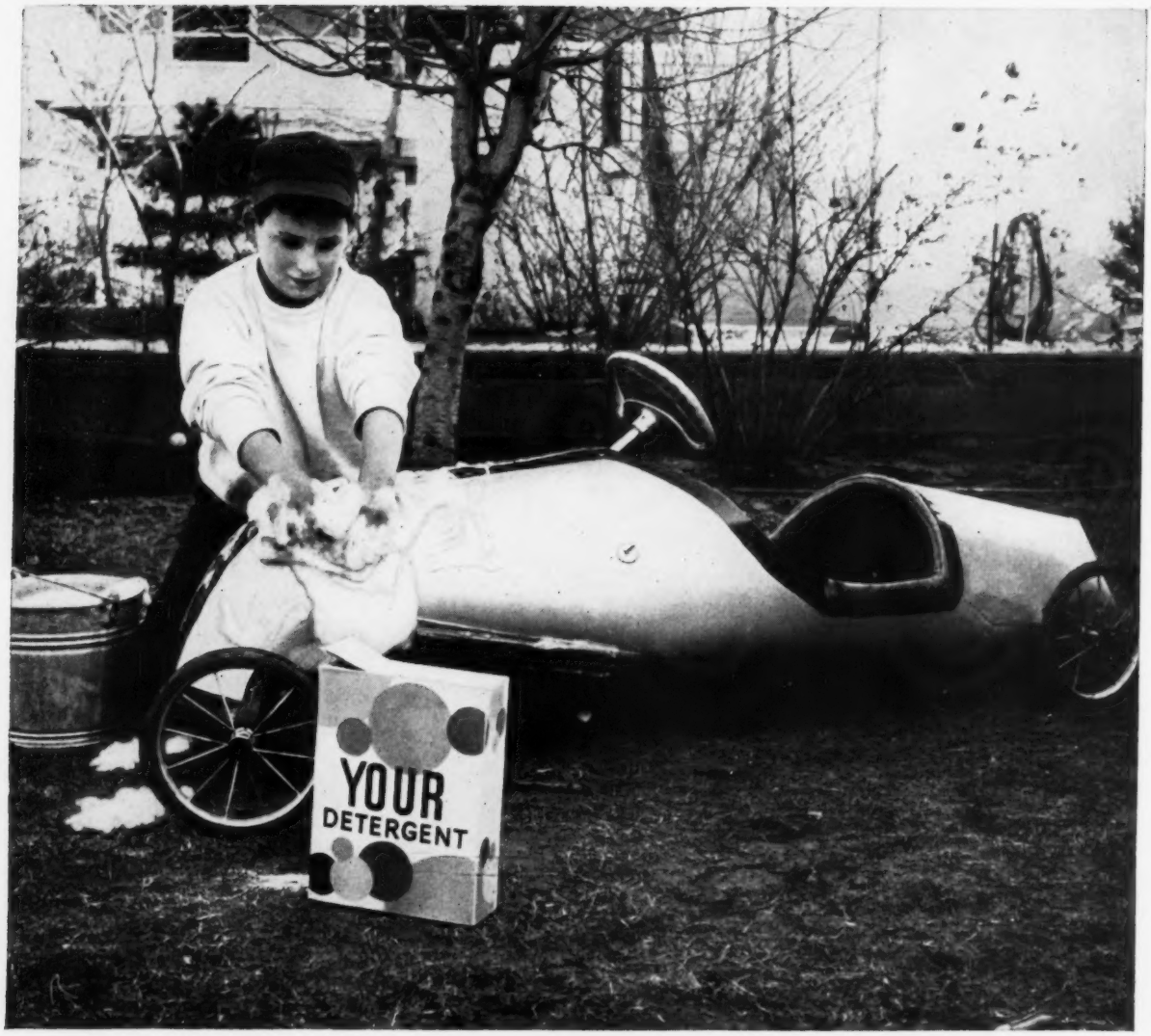

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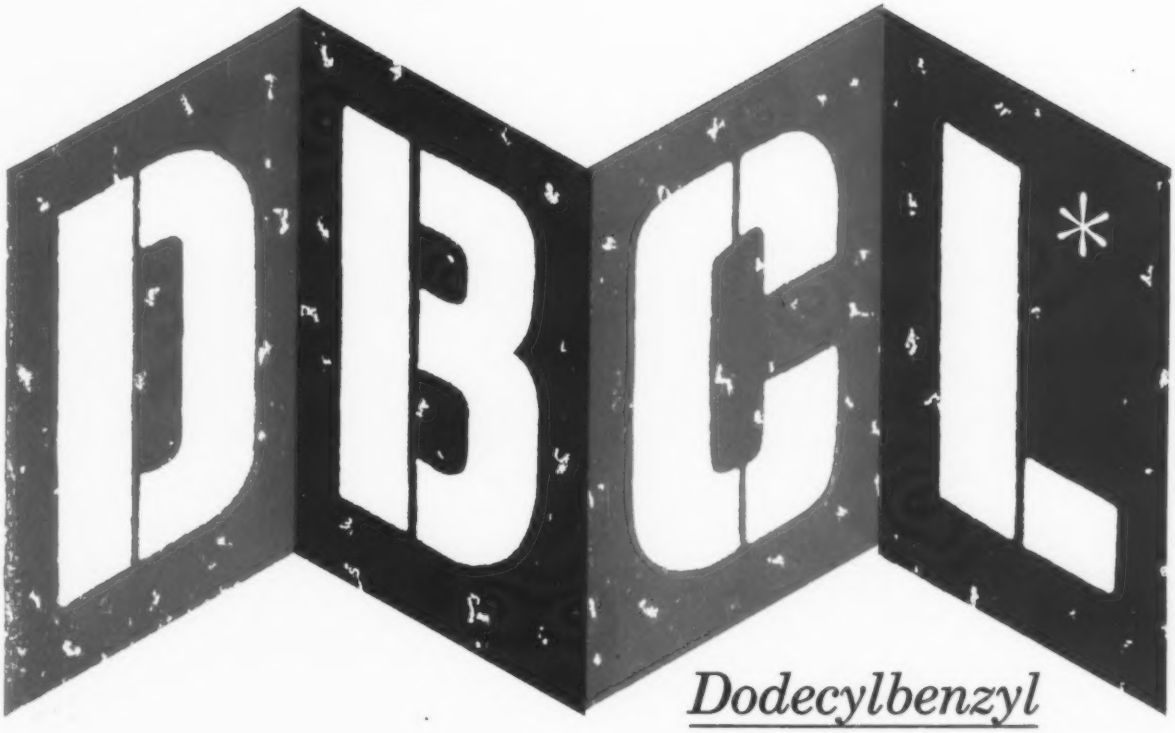

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technical grade
. . . the intermediate for cationic surface active agents

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Specific Gravity at 60°F	0.965
Apparent Molecular Weight	292
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Minimum Activity	90%
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Viscosity S.U.S. at 100°F	105
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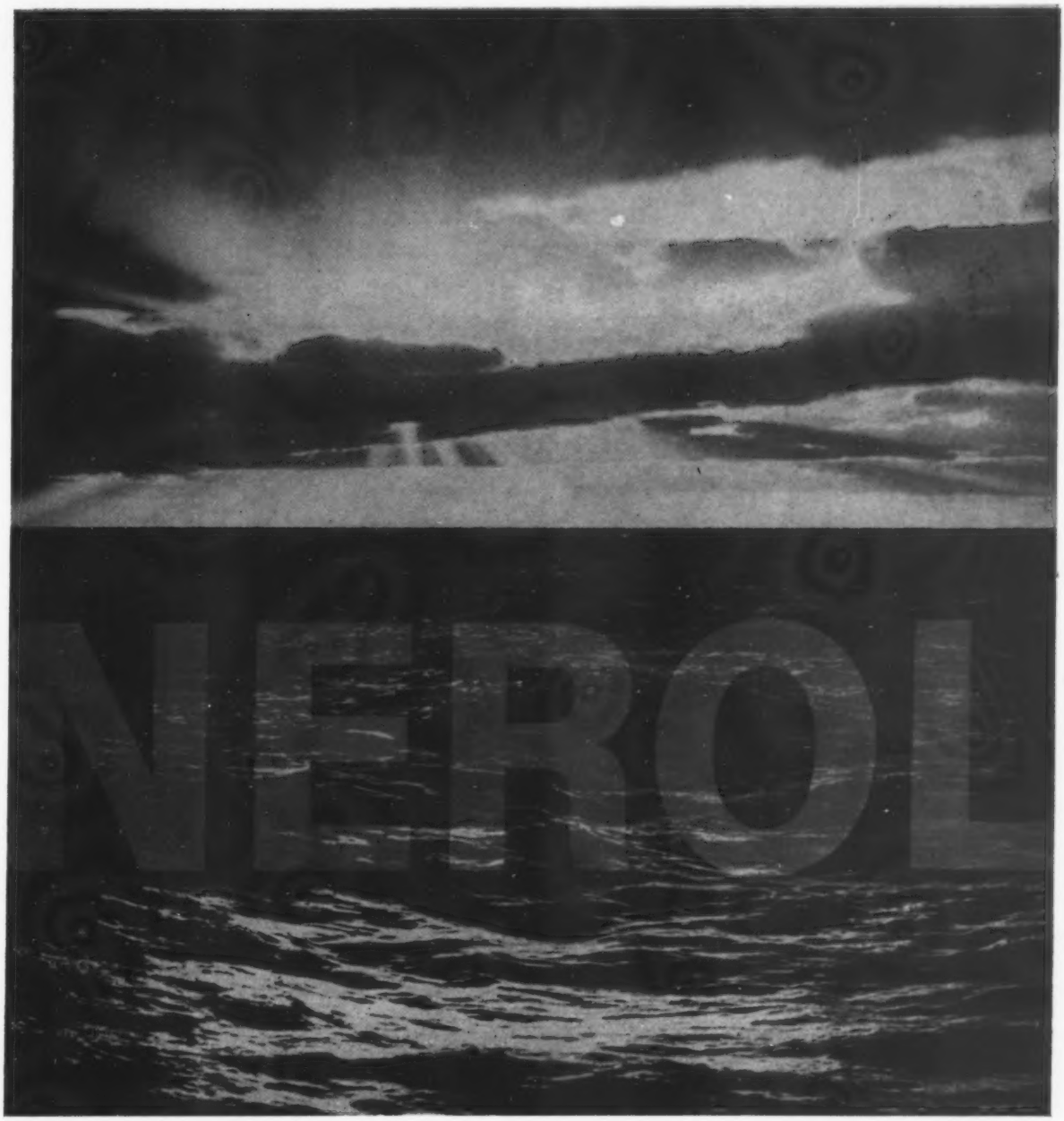

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BTC-2125

(Our 50th Anniversary Achievement)

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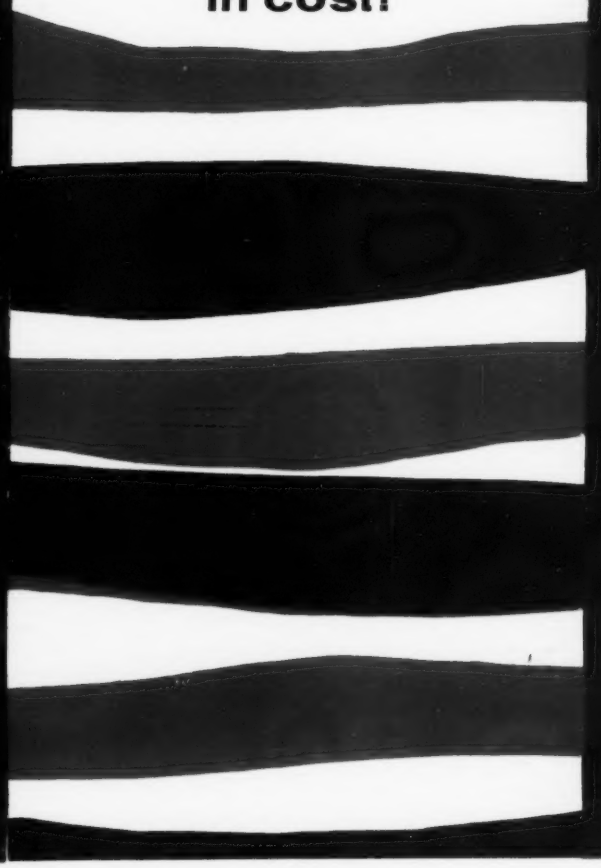

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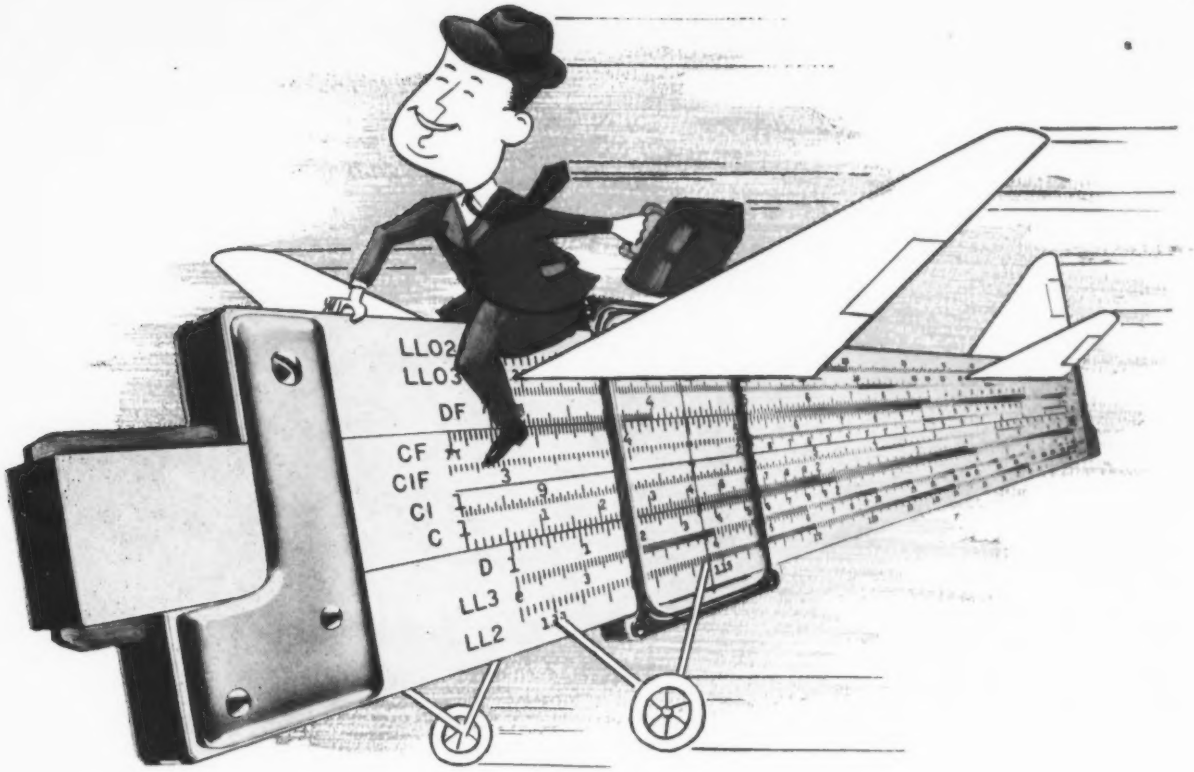

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"Coming in on a wing and a slide-rule" is no exaggeration.

With our plants and laboratories just hours away by plane, our customers frequently rely on us for experienced assistance when out-of-the-routine problems arise. FMC production and process engineers . . . materials handling experts . . . specialists in textiles, paper or glass-making . . . whatever help the situation demands are in the customer's plant in short order when they are needed.

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FOOD MACHINERY AND CHEMICAL CORPORATION
Chlor-Alkali Division
General Sales Offices:
161 E. 42nd STREET, NEW YORK 17

FOOD MACHINERY AND CHEMICAL CORPORATION

How spray-dried phosphates give your detergents 30% more bulk at the same cost...and the same weight

The secret's in the hollow centers. When sodium phosphates are spray-dried, each granule has an air bubble in its middle. This makes them 70% bulkier than conventional phosphates.

You can plainly see what this bulky phosphate will do when you put it in your detergent. Its 70% greater mass adds 20% to 30% to your package size (depending on the amount used) —and *nothing* to your cost.

Free-Flowing. Because of their high air content, spray-dried phosphates are always loose.

They dissolve fast, too—two or three times faster than common forms. And they are 97% to 99% pure, meeting the highest standards anywhere.

Two to choose from. Hooker makes two spray-dried phosphates—sodium tripolyphosphate and tetrasodium pyrophosphate. Both are sold under the brand name SHEA.®

For more information on how to make better detergents by using these phosphates, write to the address below.

You can get the following in regular density: disodium phosphate, trisodium phosphate, sodium hexametaphosphate, and sodium tripolyphosphate.

HOOKER CHEMICAL CORPORATION

Phosphorus Division, Box 326, Dept. SC-4, Jeffersonville, Indiana
Sales Offices: Chicago, Illinois, Jeffersonville, Indiana, New York, N. Y.

HOOKER CHEMICALS PLASTICS

After Closing

Leon Miller Retires

Leon W. Miller retired early this month as assistant and consultant to the executive vice-president

Leon W. Miller

of the Plastics and Coal Chemicals Division of Allied Chemical Corp., New York. Mr. Miller joined Allied as a building products salesman in Cleveland in 1916. Transferred to New York in 1930, he became sales manager of the specialties department and within a year was named manager of chemical sales for the Barrett division. In 1958 he was appointed director of chemicals sales for the plastic and coal chemicals division and late last year was named to his most recent post. Mr. Miller is on the executive committee of the Drug, Chemical and Allied Trades Association and was elected a director of the New York Board of Trade last year.

—★—

Bon Ami in Mexico

An agreement was reached early this month licensing the manufacture and marketing of products of Bon Ami Co., New York, in Mexico. The company has established a new group in Mexico. The group in Mexico City known as Bon Ami de Mexico, S.A., which will operate on a local basis and plans to lease space in that city. A substantial advertising and marketing budget is reported to have been earmarked for introduction of Bon Ami products in Mexico. Managing directors of the new company are Leon Stavchansky and David Aisenman.

—★—

Colgate to Sell Land

Colgate-Palmolive Co., New York, recently appointed a Hoboken, N. J., real estate agent to sell a 35-acre tract of land it owns in Bloomfield, N. J. The site was purchased in 1955 by Colgate for a research laboratory. Last September it was decided to build a multi-million dollar research and development center on a 75-acre tract purchased from Rutgers University in New Brunswick, N. J. (see *Soap and Chemical Specialties*, October 1959, p. 191).

—★—

Seeland Heads LeGear

Frank Seeland was elected president last month of Dr. LeGear, Inc., St. Louis, manufacturer of proprietary animal health products. He succeeds Daniel H. LeGear, who is retiring because of ill health. Mr. Seeland continues as vice-president of the farm chemical and insecticide division of S. B. Penick & Co., New York, which acquired controlling interest last year of Dr. LeGear, Inc. With Penick since 1952, Mr. Seeland became vice-president last year. He has been in charge of marketing many of the company's agricultural chemicals and animal health products.

Frank Seeland

—★—

Bono Peck's Advtg. Head

The appointment of Andrew M. Bono as advertising director and sales promotion manager for Peck's Products Co., St. Louis, Mo., was announced last month by Leo G. Peck, vice-president. Formerly in an advertising and sales promotion post with a national firm in St. Louis, Mr. Bono has had 16 years of industrial advertising experience. Peck's Products, established in 1918, produces soaps, detergents, and chemical specialties.

Andrew M. Bono

—★—

CSMA Golf Tournaments

Reservation forms covering the first Chemical Specialties Manufacturers Association golf tournament, to be held June 16, have been sent to the membership. The deadline for reservations accompanied by checks is May 15th. No refunds will be made after June 1. Cost of entry for the golf tournament and a special steak dinner is $20 per person; dinner alone is $10. The golf tournament will be limited to 150 players. The tournament is open to all CSMA members who may bring one guest per member representative attending the outing.

As previously announced, the tournament will be held at the

Knollwood Country Club, White Plains, N. Y. on Thursday, June 16. Tee-off time will start at 8:00 A.M. No tournament round will start after 2:00 P.M. Dinner will be served at 7:30 P.M. at which time golf and door prizes will be awarded. Luncheon and beverages, also caddy fees, will be on an individual cash basis. Members and guests will make up their own foursomes, although the committee will assist in filling foursomes if desired.

A special CSMA trophy will be awarded to the low-gross winner of the tournament. This trophy will have the winner's name engraved on it and remain in perpetual play. It will be on display at the CSMA office and at general conventions. A smaller replica will be awarded the winner to keep. Only a CSMA member is eligible to win the Association trophy. In addition to the trophy, numerous prizes for both guests and members will be awarded, including door prizes for non-golfers.

At a meeting of the CSMA Golf Committee held at Clearwater, Florida, March 22, early plans for a second CSMA golf tournament to be held in Chicago on or about September 20 were discussed. Charles E. Allderdice Jr. of the Bell Co. and Robert W. Svendsen of Chase Products Co. are investigating the possibilities of holding the mid-west tournament at the Medina Country Club. Fred Lodes of Lodes Aersol Consultants, CSMA treasurer, is chairman of the CSMA Golf Committee.

—★—

New Heyden Newport Plant

Heyden Newport Chemical Corp., New York, is building a 24,000 ton per year tall oil refining plant at Oakdale, La., which is expected to go on stream early next year. The plant will be the company's second for the converting of crude tall oil to higher grade products marketed by the Newport Industries Co. division, producer of naval stores. Tall oil fatty acids and resins, and distilled tall oil will be produced at the new plant.

CSMA To Hear Fed. Trade Com. Head

EARL W. Kinter, chairman of Federal Trade Commission, will speak at the 46th midyear meeting of the Chemical Specialties Manufacturers Assn., it was announced early this month by A. S. Mulliken, CSMA secretary. The meeting will be held at the Drake Hotel, Chicago, May 16-18. Mr. Kinter will speak at the group luncheon, Tuesday, May 17. His subject has not been announced as yet.

Another government speaker, J. Kenneth Kirk, Assistant to the Commissioner, Food and Drug Administration, Department of Health, Education, and Welfare, will address the general session on Wednesday morning, May 18. He will discuss the recently enacted Food Additives amendment to the Federal Food, Drug, and Cosmetic Act.

The three day meeting gets under way formally on Tuesday morning, May 17. Concurrent sessions of four of the six divisions of which CSMA is composed are scheduled for the first morning of the midyear meeting. Automotive, Detergent and Cleaning Compounds, Disinfectant and Sanitizers, Insecticide, and Waxes and Floor Finishes Divisions will meet the morning of May 17. Only one division, Aerosol, will meet in the afternoon.

A general session will occupy the morning of Wednesday, May 18. In addition to the address by the assistant to the commissioner of FDA, other features of this session include the reports of the president, secretary, and treasurer of CSMA.

In the afternoon individual sessions are scheduled for the Aerosol, Automotive, Insecticide and Waxes and Floor Finishes Divisions. A joint meeting of the Detergent and Cleaning Compounds Division and the Disinfectant and Sanitizers Division is also slated for Wednesday afternoon, May 18.

Monday, May 16, will be given over to meetings of the Board of Governors and various CSMA committees.

A highlight of the program scheduled for the Aerosol Division is a panel discussion of pharmaceutical aerosols. This will take place on Tuesday afternoon, May 17. Subjects to be discussed and speakers include: "Sterile Filling," by Carl Stern, American Cyanamid Co.; "Package Development of Pharmaceutical Aerosols," by John Graham, Schering Corp.; "Introducing Pharmaceutical Aerosols," by E. Pomerantz, Chas. Pfizer & Co.; "Aerosol Inhalation Therapy," by John Sciarra, St. John's University; "Problems and/or Requirements in Filling Pharmaceutical Aerosols," by a speaker from John C. Stalfort & Sons; "Market Potential for Pharmaceutical Aerosols" by a representative of the market surveys department of General Chemical Division of Allied Chemical Corp.

Also meeting Tuesday morning, May 17, is the Detergent and Cleaning Compounds Division. Discussion topics and speakers include: "Hospital Cleanliness," by Dr. Harry Harding, Evanston Hospital; "Corrosion of Equipment as Related to Clean Practices," by Dr. Howard Francis, Armour Research Foundation; "Hard Surface Cleaning," by Ray Liss of Monsanto Chemical Co.; "New Surfactant Developments," by Dr. Donald A. Price, consultant.

The Insecticide Division session the morning of Tuesday, May 17, calls for the following papers: "The Impact of the Nematode, Plant Regulator, Defoliant and Dessicant Amendment to the Insecticide, Fungicide and Rodenticide Act on the Manufacturers of Insecticides," by John T. Coyne, Pesticide Regulation Section, U. S. Dept. of Agriculture; "The Use of Flannel Boards in Presenting the Data to the Public," by M. P. Jones, Extension Entomologist; "Garden Insecticides," by Dr.

Harry L. Haynes, Union Carbide Consumer Products Division of Union Carbide Corp; "Radioactive Tracer Work to Determine Possible Residues in Milk and Meat from Dairy Sprays," by Dr. L. A. Cutkomp, Department of Entomology, University of Minnesota.

Tentatively listed for the program of the first session of the first session of the Waxes and Floor Finishes Division are the following: "Product Certification," by Earl Brenn, Huntington Laboratories; "Comparison of Copolymers and Mechanical Mixtures of Polymers in Floor Polishes," by Max Potash, Polyvinyl Chemicals, Inc.; "Preparation of Nonionic Emulsions of Polyethylene," by M. Brunson, Eastman Chemical Products; "Formulation Studies on Various Synthetic Latexes," by M. Halpern, Borden Chemical Co.; "Visco-elastic Behavior of Wax Films," by A. Pearce, S. G. Johnson & Son, Inc., and O. Gutfreund, Armour Research Foundation; "Carnauba Wax — The Molecule," by Lee Prince, Reichhold Chemicals, Inc.

A panel discussion of the role of independent consulting laboratories is slated for the first meeting of the Disinfectant and Sanitizers Division, Tuesday morning, May 17. Dr. L. S. Stuart of the U. S. Department of Agriculture will act as moderator. Participants include Dr. A. Haldane Gee, of Foster D. Snell, Inc., and Miss B. Shapiro, Hudson Laboratories, representing consultants. Industry's viewpoint will be outlined by Irving Gaines of Onyx Oil & Chemical Co. and P. G. Bartlett of West Chemical Products, Inc.

In addition to the presentation of the results of the annual aerosol products survey for 1959, the Wednesday afternoon session of the Aerosol Division, will feature a paper on the "Safe Use of Hydrocarbon Propellants" by a representative of Peterson Packaging and Filling Corp. A speaker from Union Carbide Chemicals Corp. will report on "A Study of Consumer Acceptance of Paints."

A seminar on regulations of the Food and Drug Administration as they apply to the products of the Disinfectants and Sanitizers Division and the Detergent and Cleaning Compounds Division will be the highlight of a joint meeting of those two divisions Wednesday afternoon, May 18.

The following papers have been scheduled for the Wednesday afternoon, May 18 session of the Insecticide Division: "Insecticidal and Toxicological Properties of DDVP," by Dr. Ralph L. Tracy, Norda Essential Oil and Chemical Co.; "Weed Control," by Jack Dressen, National Agricultural Chemicals Assn.; "Pesticide Formulations," by Garth Coombs, Johns-Manville; "Recent Developments in Insecticides for the Control of Medically Important Arthropods," by Dr. Herbert S. Schoof, U. S. Public Health Service; "Determinations of Lethane Residues," by Charles Gordon and John S. Barker, Rohm and Haas Co.

On the social side, the "open house" night will take place on Tuesday evening, May 17, with the cocktail party, banquet and floor show the concluding event on the night of Wednesday, May 18.

—★—

Speel to Universal Oil

Henry C. Speel joined Universal Oil Products Co. at Des Plaines, Ill., last month. In his new post he will be engaged in market research and development work.

Prior to his recent appointment Mr. Speel was associated with Eugene W. K. Schwartz in consulting work in New York and ran his own consulting laboratory in Darien, Conn. Before he set up his own business he was associated with Wyandotte Chemicals Corp. in Wyandotte, Mich., General Aniline & Film Corp., New York, and Alrose Chemical Co.

Mr. Speel has edited and contributed to two editions of "Textile Chemicals and Auxiliaries," a textbook emphasizing the role of surface active agents and detergents in the textile industry.

Giorgi to Residex

Anthony Giorgi has been appointed products manager for Residex Corp., Clark, N. J., formu-

Anthony Giorgi

lators and distributors of insecticides and weed control materials, it was announced last month by John V. Lembach, vice-president and general manager. Mr. Giorgi, formerly a sales representative for a national agricultural company' assumes his new duties at the company's recently completed general offices and warehouse in Clark.

—★—

Advanced by Boyle-Midway

The appointments of Owen Carroll and Clark Glenn as product managers and Donald J. Shea as assistant to the president of the Boyle-Midway Division of American Home Products Corp., New York, were announced last month by Bernard Gould, president of Boyle-Midway. Mr. Carroll is responsible for "Sani-Flush" and new products. Mr. Glenn handles "Wizard Charcoal Lighter," "3-in-1 Oil," and "Plastic Wood." Mr. Shea was formerly a product manager and joined the firm in 1956.

—★—

Adopts New Name

The organization formerly known as Pharmaceuticals, Inc. & J. B. Williams' Co. New York, has changed its designation to J. B. Williams Co., it was announced recently. The company will have a pharmaceutical and a toiletries division.

New Harchem Sales Head

The appointment of Edmond V. Tyne as sales manager of the Harchem Chemical department

Edmond V. Tyne

of Wallace & Tiernan, Inc., Newark, N. J., was announced last month by Charles H. Rybolt, vice-president of chemical divisions. Mr. Tyne replaces M. F. Antonovich, who now heads Harchem's purchasing department. Previously with Minnesota Mining and Manufacturing Co., St. Paul, Minn., Mr. Tyne served most recently with that company as eastern regional sales supervisor for its chemical divisions. He has had 22 years of chemical marketing experience. Harchem produces specialty chemical intermediates, fatty acids and their esters, specialty plasticizers, and di ester fluids for synthetic lubricants.

—★—

Universal Buys Trubek

Universal Oil Products Co., Des Plaines, Ill., has acquired controlling interest in Trubek Laboratories, East Rutherford, N. J., it was announced recently by David W. Harris, UOP chairman. The agreement, signed late in March, provides for 100 per cent ownership of Trubek stock within two years. No stock transaction was involved; total payment by Universal will approximate $6,000,000.

Trubek Laboratories was founded in 1932 by Robert Trubek, who was the principal stockholder and who will continue to be active as president of the company.

—★—

Arthur Riddiford Dies

Arthur B. Riddiford, Sr., 96, a founder of Riddiford Brothers, Inc., Chicago, died Feb. 11 in West Suburban Hospital in that city. The firm, which was founded in 1884, is located at 308 Randolph St., Chicago, and is a leading distributor of maintenance and sanitary supplies. Mr. Riddiford retired from the company in 1955.

—★—

SAACI Sports Night

SAACCI Sports Night will feature football again this year. It will be held April 25 at Brass Rail Restaurant, 40th Street and Park Avenue, New York, starting with cocktails at 5:30 p.m. A full course filet mignon dinner with free beer at 7:00 followed by entertainment is included in the charge of $12.00 per person.

Andy Robustelli, star of the New York Football Giants will discuss his experiences with the Giants. Other attractions will include Hank Leonard, the comedian, and a sound film of highlights of the Giants' 1959 season games, including the championship game with the Baltimore Colts.

There will be door prizes and table gifts and as grand prize—a set of four season tickets for the Giants' 1960 games for the lucky ticket holder, at one dollar per chance.

Deadline for reservations and cancellations is April 22. For reservations contact George M. O'Brien, U.S. Industrial Chemicals Co., 420 Lexington Avenue, New York 17.

—★—

Pennsalt Building Plant

Construction of a new alkyl alkanol amines plant was begun recently at the Wyandotte, Mich., works of Pennsalt Chemicals Corp., Philadelphia. Expected to cost about $1.5 million, the new plant is scheduled to be on stream by the end of this year.

Cos. Chemists' Award

The Society of Cosmetic Chemists will present its 1960 special medal award to Dr. Aaron

Dr. Aaron Lerner

Lerner of the Yale University School of Medicine. The presentation will take place at the society's semi-annual meeting to be held May 12th at the Hotel Biltmore, New York. The award which carries a prize of $1000 recognizes Dr. Lerner's work on enzymes and hormones controlling skin pigmentation. He is considered a pioneer in the study of melanin.

The meeting program will be highlighted by a talk to be delivered by G. Robert Clark, an honorary member of the society and director of the Division of Cosmetics, Food and Drug Administration, Washington, D.C. Dr. Clark will outline current problems of concern to the administration and to industry.

Scientific contributions include the following titles:

"The Pathogenesis of Alopecia", by Dr. Norman Orentreich, New York; "Assay of Lyophilized Placenta Extract", by William Colburn, Colburn Laboratories, Chicago; "Effect of Vehicle Components and Sebum Constituents on the Absorption Characteristics of Sun Screens", by Dr. Sydney Reigelman, College of Pharmacy, University of California, San Francisco; "Molecular Forces in Permanent Waving", by Herman Bogaty, Toni Co., Chicago; "Non-Aqueous Foam Propulsion Systems", by David S. Tillotson, Pennsalt Chemicals Corp., Chestnut Hill, Pa.; and "The Use of Ternary Diagrams in Cosmetic Formulations", by R. James and R. Goldemberg, Shulton, Inc., Clifton, N. J.

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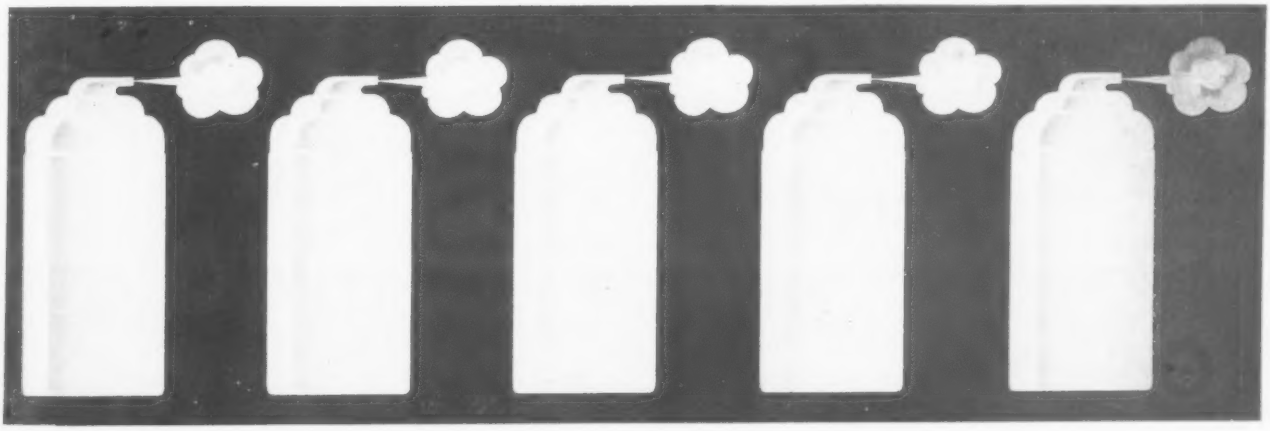
to bring exciting new merchandising possibilities and sales success to your aerosol packaged products.



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FELTON'S imaginative perfume chemists and aerosol technicians have the "know-how" and the facilities to suggest, adapt or custom-create the fragrance to give sales appeal and meet the exciting requirements of YOUR aerosol products.

Let our aerosol "know-how" and facilities serve you . . . *consult us freely.*

PLANTS: BROOKLYN, N. Y. • LOS ANGELES, CAL. • MONTREAL, QUE. • VERSAILLES (S&O) FRANCE

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What's brand new?----------

You expect *more* from the leader, rightfully so. And now a new Oronite manufacturing process improves the leading detergent raw material—ALKANE—making it better than ever.

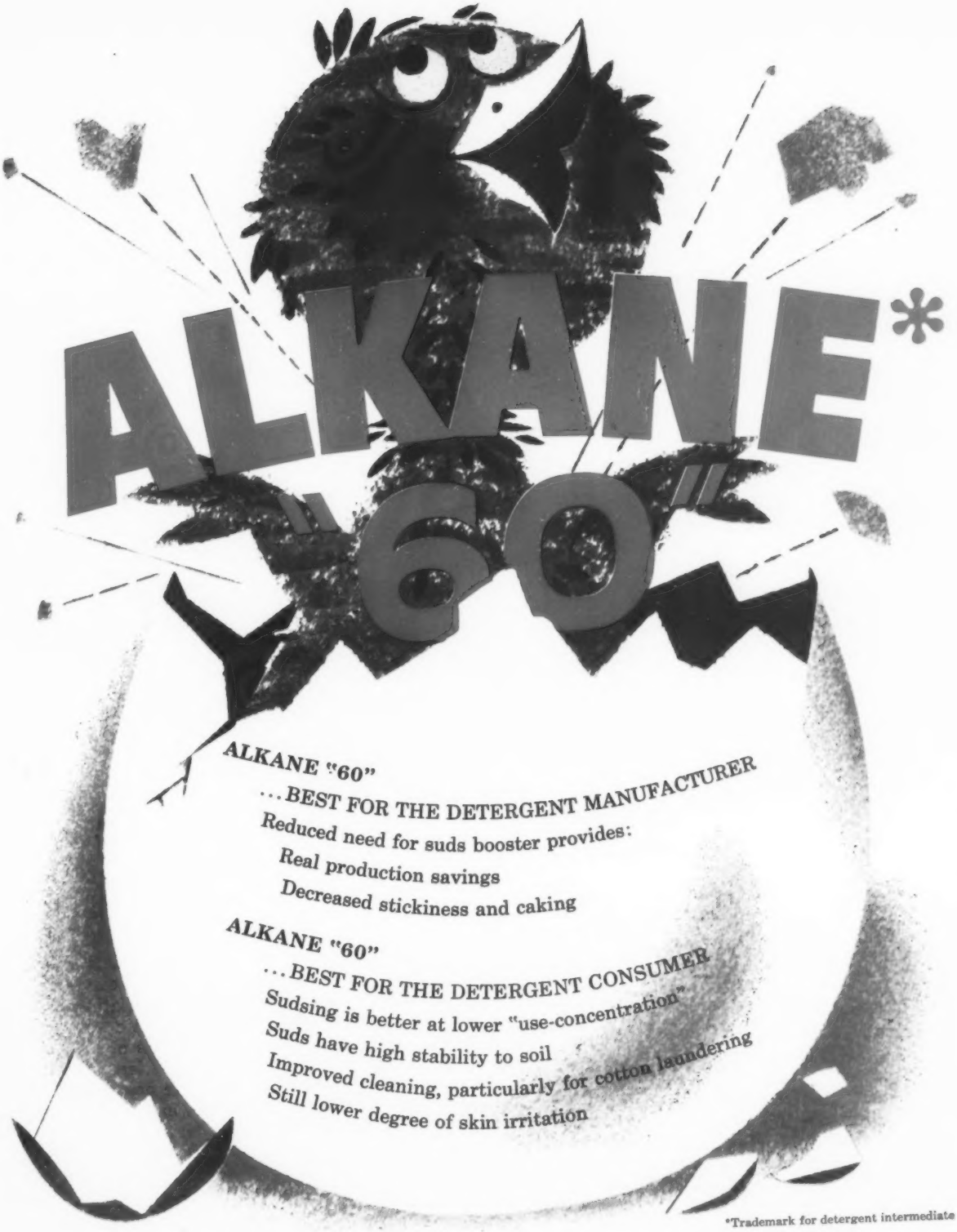
Oronite's new alkylate, ALKANE "60", eliminates some of the deficiencies of present dodecylbenzenes used in heavy duty detergents. Yet, ALKANE "60" retains the excellent sulfonation quality of ALKANE '56.

ALKANE "60" provides the user greater production economy plus superior product performance.

For complete information, contact the Oronite office nearest you.

Alkane "60" heavy duty formulations without suds boosters (left) show improved foaming in soft water compared to dodecylbenzene based products (right).

Alkane "60" based products are less irritating to the skin.



ALKANE "60"

...BEST FOR THE DETERGENT MANUFACTURER

Reduced need for suds booster provides:

Real production savings

Decreased stickiness and caking

ALKANE "60"

...BEST FOR THE DETERGENT CONSUMER

Sudsing is better at lower "use-concentration"

Suds have high stability to soil

Improved cleaning, particularly for cotton laundering

Still lower degree of skin irritation

*Trademark for detergent intermediate

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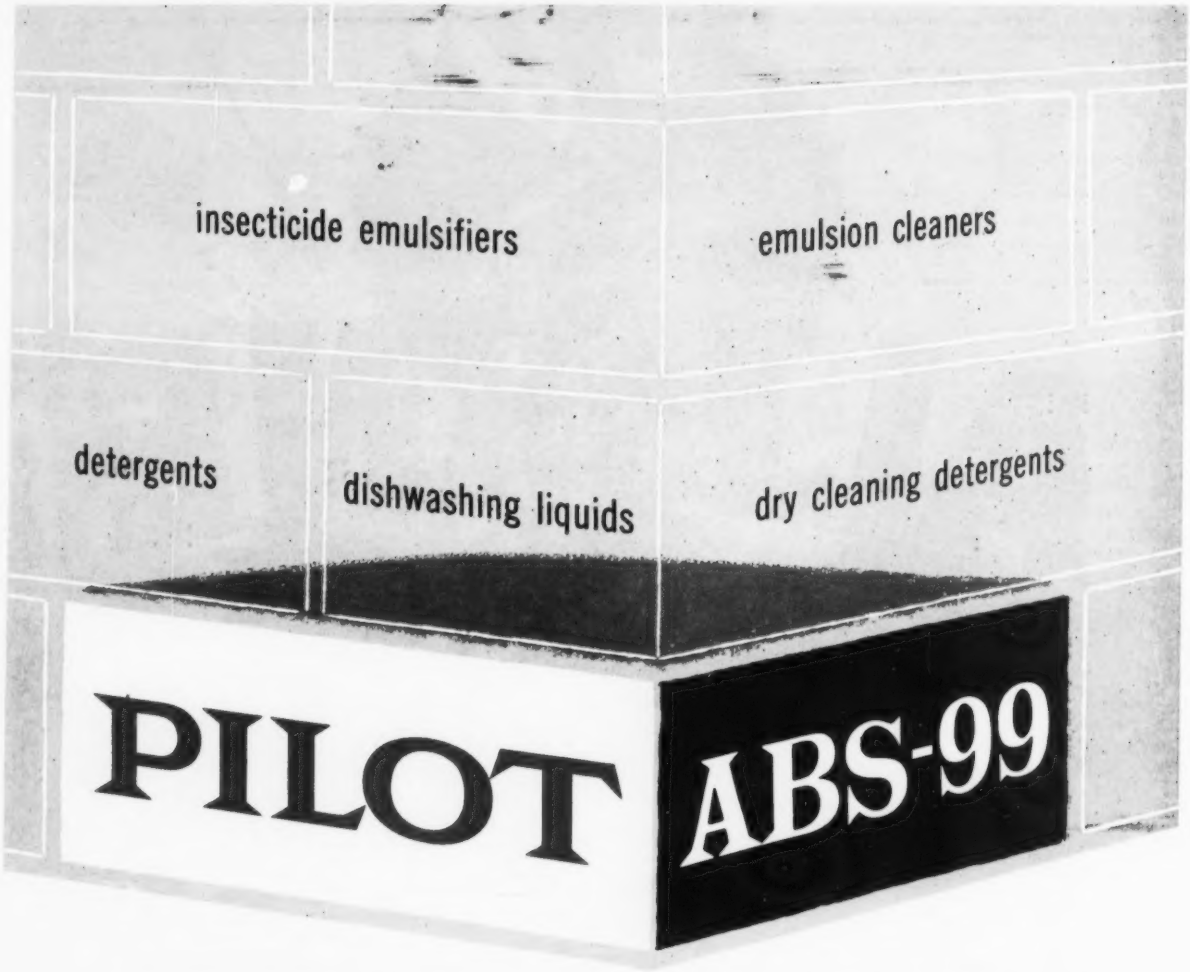

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. . . has no measurable amount of water
. . . contains less than 1% sulfuric acid

Whether you formulate shampoos for rugs, cars, or heads, or many other surface active products marketed today – Pilot ABS-99 is your cornerstone for making them better!

ABS-99 is a *98% pure sulfonic concentrate* – the highest commercially available – that you can keep in *plain steel* containers, pump or pour, and neutralize without bleaching.

ABS-99 has outstanding stability, detergency and sudsing character which are a result of Pilot's unique ice-cold, dilute, air-free vacuum sulfonation.

This "*cold processing*" means a better material for building better products: emulsion cleaners without water contamination; organic emulsifiers without inorganic acid contamination; liquids and pastes of low sulfate content; and "dry neutralization" compounding free from moisture or sulfate dilution – dry mixes, thus made, can be gradually raised to higher concentrations by adding quantities of Pilot HD-90, high active Alkyl Aryl Sulfonate flake.

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A capable compact organization with complete facilities at your disposal.

Small enough so that your problem is as important to us as it is to you . . .

Large enough so our group experience is a valuable component for you, to have.

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• Synthetic Aromatic Products and Organic [illegible] • Bouquets and Finished Compositions
• Synthetic Flower Oils and Aromatic Bases • Essential Oils

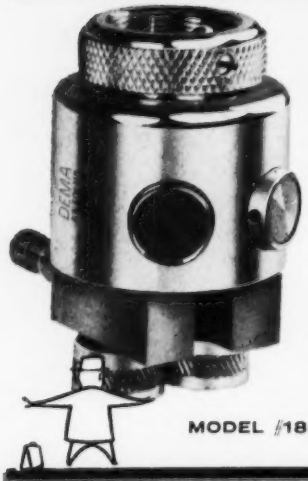
"turn on" more detergent sales with DEMA liquid controllers!

Stainless steel construction makes this Dema proportioner adaptable to a variety of products. Single push-button operation with *anti back-siphoning feature*. Attaches to faucet, connects to bulk container thru polyvinyl tube, gives perfectly proportioned mixture. Resets automatically to clear water.

MODEL #183: Fixed Proportion
MODEL #184: Adjustable Proportion

Here's a real heavy-duty aluminum alloy and stainless steel dispenser designed for waterless hand cleaners and protective creams. Holds factory-filled disposable slip cover cans of any depth. Self-priming, self-lubricating suction pump is push-button operated. No gears or levers to get out of order.

MODEL #310-4: 4¼" Outside Diameter Cans
MODEL #310-5: 5⅛" Outside Diameter Cans
MODEL #310-6: 6" Outside Diameter Cans



This new dual proportioner by Dema does double duty, selectively, dispensing two liquid products. One push-button controls detergent . . . the other disinfectant. Attaches to faucet and draws fluids from bulk containers thru polyvinyl tubing. Has *anti-back-siphoning feature* and automatically resets to clear water.

MODEL #189: Adjustable Proportion

A stainless steel constructed automatic liquid controller suitable for a variety of products. Single push-button operation. Attaches to faucet, draws liquid concentrate from any size container, dispenses it accurately in any desired proportion. Resets automatically to clear water.

MODEL #181: Fixed Proportion
MODEL #182: Adjustable Proportion

A manually-operated, wall-type pump dispenser fabricated from aluminum alloy and stainless steel. Draws liquid detergent from bulk container thru a connecting polyvinyl tube. Delivers one *sure* ounce of solution with each stroke of the pump.

MODEL #301

DEMA

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Designers and Manufacturers of Automatic Dispensing Devices

702 E. Big Bend Blvd., St. Louis 22, Mo.

write today for complete information

Take a Closer Look at Tripoly

If you can increase the Sodium Tripolyphosphate content of your synthetic detergents it will pay you to do it. Tripoly steps up the cleaning power of the components in your formulation, especially the wetting agents. Yet it costs less than those synthetics it replaces. The saving lets you formulate a better balanced detergent since you don't need to employ harsh alkalis to offset a high wetting-agent cost. The improvement shows up in your sales.

Blockson Tripoly is outstanding in its ability to control hard water. Its strong buffering action assures solution stability and it works easily into a wide range of formulations from dish and laundry detergents to floor, wall and metal cleaners. May we send you a data sheet or sample?

BLOCKSON

BLOCKSON CHEMICAL COMPANY

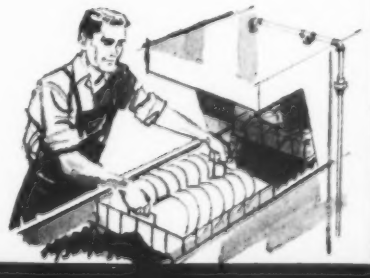
Chemicals Division

Olin Mathieson Chemical Corp.

Joliet, Ill.

TRIPOLY THE SYNERGIST

In dishwashing compounds, Tripoly's synergistic action boosts the detergency of the components and speeds grease removal. Enhances the free rinsing sparkle your formulation imparts to glassware.

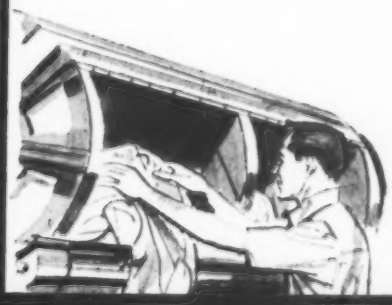


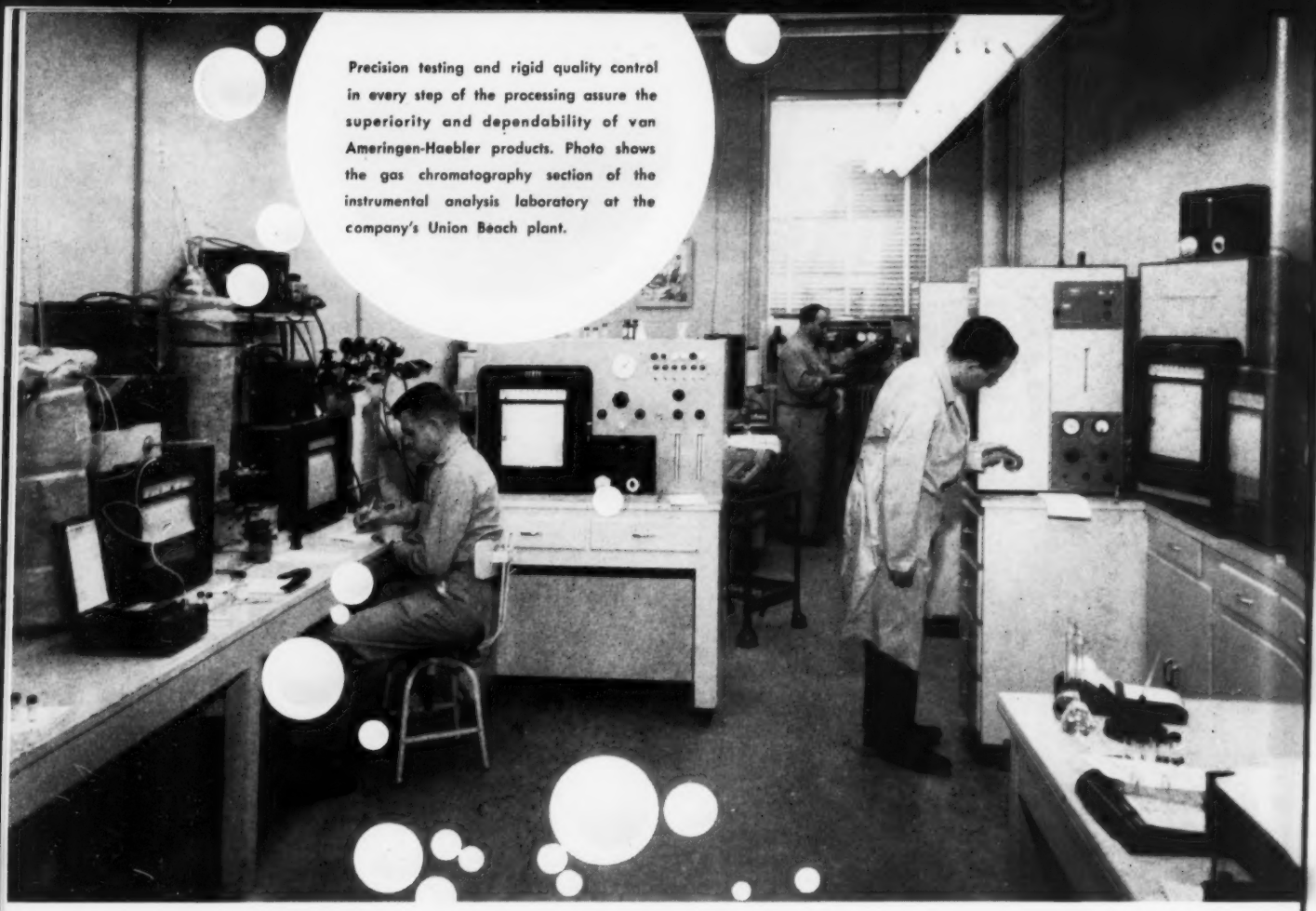
—THE SEQUESTRANT

In washing machine compounds, Tripoly sequesters the hardness elements. No insoluble precipitates adhere to fabrics or machine. Tops, too, for all non-ionic based controlled-suds detergents.

—THE PEPTIZER

In laundry compounds, Tripoly peptizes soils into a stable suspension that helps prevent redeposition on the wash. Result: whiter clothes, shorter wash cycle, less wear and tear on the fabrics.





Precision testing and rigid quality control in every step of the processing assure the superiority and dependability of van Ameringen-Haebler products. Photo shows the gas chromatography section of the instrumental analysis laboratory at the company's Union Beach plant.

Finer Fragrance

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Improve the quality of fragrance in your soap . . . Adopt a perfume that has been carefully and professionally designed to offer greater appeal and inspire broader consumer demand . . . This is one way you can be assured of a bigger share of today's market.

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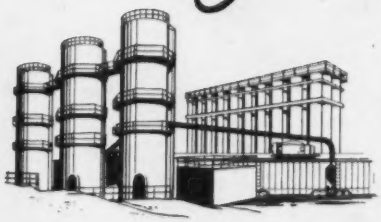

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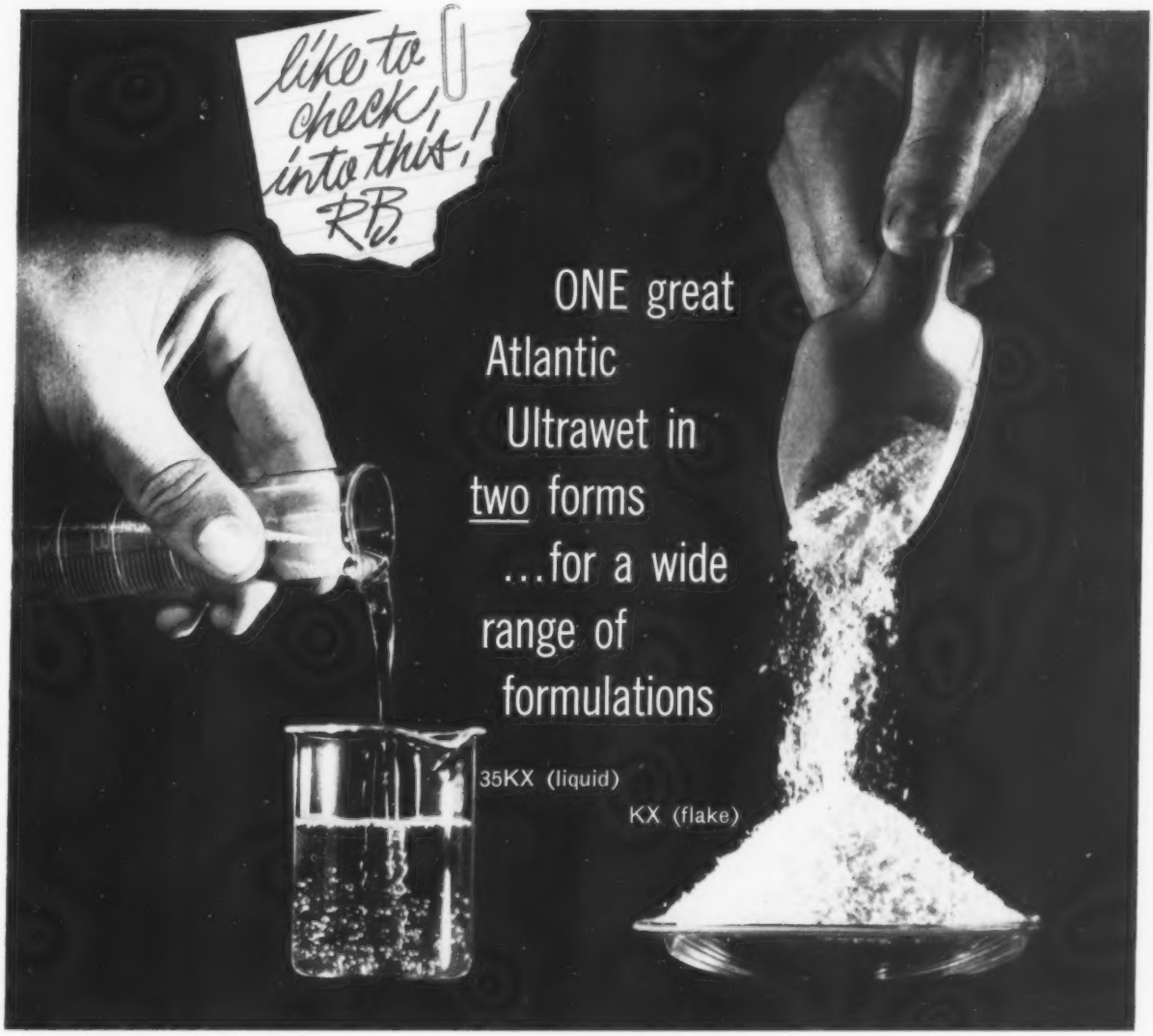

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You are invited to consult Atlantic's chemically trained sales engineers on formulations employing versatile Ultrawet 35KX or KX, or for technical assistance, without obligation, on other Ultrawets to improve products or processes or for developing new applications or proposing ways to cut manufacturing costs. Write to Chemicals Division, The Atlantic Refining Company, 260 South Broad Street, Philadelphia, Pa.

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. . . IN BRIEF

as the editor sees it . . .

ADDITIVES . . . The possible far reaching effects of the Food Additive Amendment to the Food, Drug & Cosmetic Act among detergents, insecticides, sanitizers, oils and other chemical products has seemingly shocked many manufacturers. The new law went into effect March 5. Just about the entire list of chemical specialties appears to be involved in one way or another.

Numerous food processors and others are demanding warranties from suppliers of chemical specialties that in normal application these products do not place users in violation of the law. This is only natural as a finger of the law points directly at these processors. However, we feel that until the amendment is really spelled out and clarified, manufacturers of chemical products of any kind should avoid issuing warranties. Such warranties issued in haste to meet a contingency may prove highly embarrassing later.

* * * * *

WARNING . . . We hear that the floor maintenance racket has popped up recently in New Jersey. These are the fellows who sell unsuspecting part-time workers a cheap floor machine, a supply of wax and a small list of prospects and get them to sign notes for many times the value of the materials. They operated in New York not so long ago, but were chased out by the state attorney general. However, they left considerable havoc in their wake, especially some bad credit losses suffered by wax and floor machine manufacturers,—not to mention the host of note signers who were unable to keep up payments and found their regular job wages being garnisheed.

The possibility exists that these racketeers are operating elsewhere than in New Jersey. If so, we have not heard about it. Nevertheless, we feel that all floor wax manufacturers should be on their guard, check new credit very carefully. No need for the same thing to happen again which happened in New York last year. Without wax, these crooks can't operate.

* * * * *

HAZARDOUS . . . Unusual agreement among industry representatives, government officials and even the AMA prevailed last month during a hearing in Washington on a House bill covering labeling of hazardous substances, mostly household chemical specialty products. The bill, H.R. 5260, sponsored by Rep. Roberts of Alabama. could be reported out of committee at any time. A companion Senate bill, S. 1283, was introduced last summer by Senator Warren Magnuson of Washington. The Senate passed the bill late in March. It now goes to the House for consideration.

The need for such legislation seems to be established, and since the area of agreement between industry and government thinking is so considerable, early passage of a workable hazardous substances labeling law is anticipated.

* * * * *

D-12 . . . Usually we're crabbing about something. We throw brickbats now and again, but seldom do we take time out to toss a bouquet where one is obviously deserved. Yes, you guessed it. We have in mind none other than the Committee D-12 of the American Society for Testing Materials, the hard-working committee which evolves standards and specifications for soaps, detergents and cleaners.

Over the years, we have watched this committee operate. It is highly productive, alive, and outspoken. It gets jobs done. It represents the best in cooperative effort on the part of basic producers and industrial consumers. Both specifications and standard tests are evolved on a completely practical basis on what the user wants and what the producer knows he can

"I hear she's got ETH-AN-OLA-MIDES in her kitchen!"

Of course she does, ladies. But you can relax. Smart, technically alert soap and chemical specialty manufacturers have stocked not only her kitchen, but nearly every other room in her house with soaps, detergents, waxes or cosmetics containing ethanolamides.

In detergents, these important compounds act as foam stabilizers and viscosity boosters. They're used as dispersing agents and corrosion inhibitors to permit packaging of institutional cleaners in mild steel. You'll find them in textile softening agents, wool scouring and cotton washing formulations.

ALLIED CHEMICAL ETHANOLAMINES— used in preparing ethanolamides — are manufactured by an improved process which assures purity and high quality. Write or phone for specifications or technical assistance in formulating ethanolamines into your operation.

For specifications and local offices, see our insert in Chemical Materials Catalog, pages 475-482 and in Chemical Week Buyers Guide, pages 37-44.

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Allied Chemical

NITROGEN DIVISION
Dept. EA 9-27-1, 40 Rector Street • New York 6, New York

supply. The interests of both small and large firms are completely protected.

Last month, the D-12 Committee met in New York for two days. We had a chance to observe this hard-working group in operation. Our admiration and respect for its fine work, we can assure you, was in no way dimmed by our observations.

* * * * *

DO SOMETHING . . . A congresswoman from the State of Washington recently demanded action to require labels to warn of the "dangers" of detergents used in home dishwashers. She stated that the death of an infant in her state had been blamed on a detergent designed for use in dishwashing machines. The child, she said, swallowed a small amount of detergent. Whether there was any medical evidence that the detergent was the true cause of death, the news reports did not state.

Tragedies of this kind, we feel, invariably bring faulty thinking on the part of those close to them. A child lost its life and something or somebody must be blamed. A new proposed law is too often the quick solution offered by lawmakers. They feel that it is necessary for them to "do something" and a new law or regulation is their first thought. Invariably it is not the answer.

Manufacturers are human beings too, something which lawmakers seem to forget. Sad things of this nature have a profound effect. That we know. But what can they do within the realm of common sense with label warnings? Nothing within the reach of new laws or regulations.

* * * * *

LOST ART . . . Is soapmaking becoming a lost art in the good old U. S. A.? It would seem that for the past decade young men have been shying away from the soap kettle like it held a potion of evil brew. And in a way, we can hardly blame them. Detergents have been pushing soap out of the picture at a rapid rate. And who wants to board a sinking ship? The old-timers are still aboard and seem to be doing pretty well. They are turning out something over a half-billion pounds of toilet soap a year in the U. S. And, good friends, let us assure you that toilet soap making is an art, not something learned out of books.

For some time now, two leading eastern producers of toilet soap, and a few other soap products, have been looking for younger soapmakers to step in and eventually take over production. But their quest seems vain. Apparently, nobody wants the jobs or at least these manufacturers can't find the men they want. It used to be that we knew no end of capable soapmakers, but they have been getting fewer and fewer as the years roll on. Most of the men we know today are old-timers, well set in their present jobs. Who will replace them when their days are done? Soap, although it has been pushed into the background by detergents, has hardly reached the buggy-whip stage as yet. We figure it's likely to be around for some years. But if nobody wants to make the stuff, what's next?

* * * * *

DETERGENT TABLET . . . Introduction recently of a detergent tablet for clothes washing machines is a development that other soap-detergent marketers are studying closely. This noval product, about the size of a small cake of hand soap, is packaged in a foil wrapped side-opening carton. What the marketer—and the competition—are seeking to determine from an initial test marketing on the West Coast is whether the product has consumer appeal. They want to know if the product and package have enough "oomph" to set off another wave of innovations in products and packaging in the soap/detergent industry.

This latest development in detergents seems to climax a revolution that began with the introduction of synthetics. Later, came liquid detergents, whose success story was spiced with changes, in packaging from glass to metal to plastics. Meanwhile, interest in packaging liquids in plastic film packs, some even water soluble—has been mounting.

To those who are wondering what will be the "final" product and the "final" package, now, more than ever, it is apparent that there will be no "final" package or product. Developments in packaging, which at times seem to outrace product improvement, are destined to evolve continually. Only one thing seems certain. Changes there will be; those who are unwilling to accept them must quit or be elbowed aside.

IF YOUR DETERGENT EMPLOYS

Alkanolamides · Alkyl Aryl Sulfonates · Lauryl Sulfates

SURFACT-CO CAN LOWER YOUR FORMULATION COSTS

Surfact-Co now supplies
the detergent industry's basic surfactants
at the lowest price
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Our detergent scientists
help you select the right
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Tech Service includes product development,
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Check with Surfact-Co.

EIGHT
LEADING SURFACTANTS
BY SURFACT-CO

WRITE FOR TECH BULLETIN AND FORMULATION SUGGESTIONS

PRODUCT	USE ASPECTS	APPLICATIONS
DODECYL BENZENE SULFONIC ACID (Surco DDBSA)	Ammonia or diethanolamine neutralization. Dry Soda Ash-Sodium Tripolyphosphate neutralization	Kerosene degreaser and cleaner • Floor cleaner-coupling agent. Low cost car shampoos. Pourable gel concentrate
AMMONIUM NONYL PHENOXYETHYLENE SULFATE (Surco 57)	Auxiliary foamer and detergent in liquid preparations	Dish detergents • car shampoos
DESALTED SODIUM ALKYL ARYL SULFONATE (Surco SF42M)	Contains minimum salt in ethyl alcohol solution	Glass rinses • Liquid dish detergents • General synthetic cleaner • Oven, exhaust fan, deep fry cleaner • Clarifying agent for ammonium alkyl aryl sulfonate solutions
LAURIC DIETHANOLAMIDE (Surco Stabilizer #2)	Standard foam stabilizer and thickener	Low cost shampoos or bubble baths • Liquid dish detergents • Lotion-type shampoo concentrates
COCONUT DIETHANOLAMIDE (Surco Coconut Condensate)	Predominantly non-ionic. Effective with cationics	Base material in high-active floor cleaner concentrates • Glass cleaner and rinse • Thickener
MIXED FATTY ACID DIETHANOLAMIDE CONDENSATE (Surfact-Co MA)	Can formulate without added coupling agent. Hard water resistance • Copious but unstable foam for rinsing ease in suggested formulations	General purpose cleaners • Wax strippers • High viscosity germicidal cleaners • High viscosity synthetic soap cleaners • Lotion-type floor cleaners
LAURYL SULFATES (Surco SLS, Surco AM-LS)	Derived from high lauryl content alcohol. Improved foaming and detergency	Rug and upholstery shampoos • Hair shampoos, clear and lotionized.
SURCO HDL BASE	Can be formulated with large quantities of Tetrapotassium Pyrophosphate for heavy-duty liquid detergents	Laundry detergent • dish detergent

SURFACT-CO

BLUE ISLAND, ILLINOIS

SURFACTANTS
SYNTHETIC DETERGENT CONCENTRATES
DETERGENT SPECIALTIES

as the reader sees it . . .

Typographical Error

Editor:

I would like to call to your attention a typographical error in my article, "Fat Derivatives in Toiletries", which appeared beginning on page 141 of the February issue of *Soap & Chemical Specialties*. Item 10 on that page should read "polyethylene glycol *ethers* of cetyl, stearyl, oleyl and lanolin alcohols."

Gabriel Barnett,
Research Division
Coty Products Corp.
New York 19, N. Y.

—★—

"Slight Mistake"

Editor:

Thank you very much for publishing the news item on our "Shampoo Compass" on page 149 of the February issue of *Soap & Chemical Specialties*. We would like to call your attention to a slight mistake. In the second paragraph of the item you state that "Texapon" is a fatty acid sulfate, whereas it should read "fatty alcohol sulfate."

Dehydag - Deutsche Hydrierwerke,
GmbH
Dusseldorf,
Germany

—★—

What's Chemical Specialty?

Editor:

Would you please give me a definition of "chemical specialties"?

Earl Brenn,
Vice-President,
Huntington Laboratories,
Huntington, Ind.

A chemical specialty is a product manufactured from basic chemicals and which is suitable in finished form for industrial or household uses. A chemical specialty is a finished chemical product ready for the specialized use for which it is designed as opposed to a basic chemical compound, i.e., a compounded polish or disinfectant as opposed to the silica, rouge, oleic acid, cresylic acid or other basic chemical used in its formulation.

The term "Chemical Specialty", was first used in "Soap" some 25 years ago and has been used continually since. We believe that we coined the term as we never saw it used before we used it. It has since come into fairly wide and general use. —Ed.

—★—

Seeks Lines

Editor:

I hope in the near future to open in the Cleveland, O., area a retail perfume store. I am interested in finding sources for importing specialties that are usually not carried in department and drug stores. Could you suggest where I might place advertisements, letters or inquiries to obtain additional lines of this type.

Of most interest would be perfumes that could be imported. Also of interest are such other items as essential oils, soaps, etc.

Charles Lederer
S. N. 108-663
P. O. Box 57,
Marion, O.

—★—

More Typos

Editor:

I note that on page 43 of the February issue of *Soap & Chemical Specialties* you have published under the heading, "Phenol Paper Faults" my letter commenting on the article, "Variations in Phenol Coefficient Testing", which had been published in an earlier issue of *Soap*. Unfortunately, in publishing my letter, two typographical errors were made. The errors are as follows:

1. The divergence in "means" . . . should read, The difference in "means" . . .
2. By not taking the square-root of each variance for each

(*Turn to Page* 196)

DCAT TOP BRASS: Officials of Drug, Chemical and Allied Trades Assn. gather at annual dinner in New York last month to welcome Earl W. Kintner, chairman of Federal Trade Commission, who was speaker for the meeting. Mr. Kintner, third from left, is surrounded by Ralph A. Clark, J. T. Baker Chemical Co., dinner program chairman; William J. Schieffelin, III, Schieffelin & Co., general dinner chairman; Helen L. Booth, DCAT secretary; William W. Huisking, Chas. L. Huisking & Co., DCAT president; James Day, Dow Chemical Co., DCAT vice-president; and William J. Quinn, counsel, chemical division, Merck & Co., DCAT Counsel.

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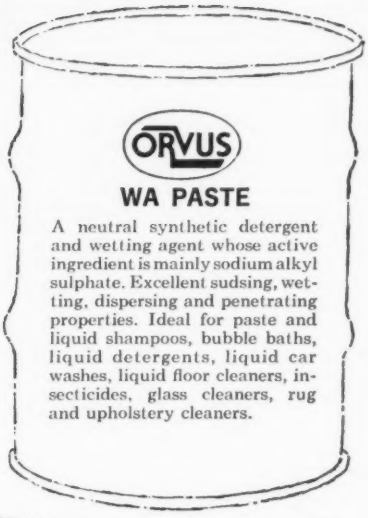
Kyro EO

A neutral nonionic synthetic detergent of the 100% alkyl-phenol ethylene oxide condensate type. A light-colored liquid with a clean, pleasant odor. Its superior detergent, wetting and emulsifying properties offer excellent performance in liquid detergents, sanitizer detergents, self-emulsifying solvents, laundry detergents, glass, textile and dairy cleaners, insecticides, and bottle washing compounds.



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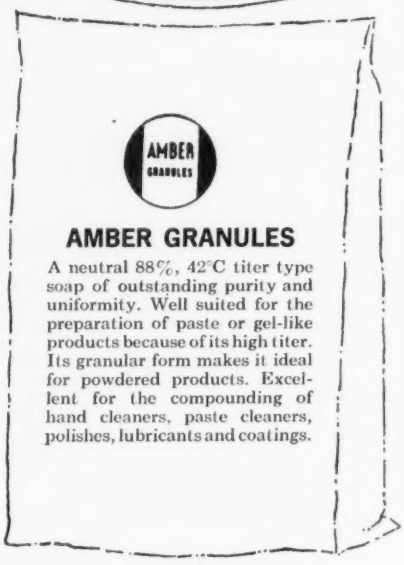
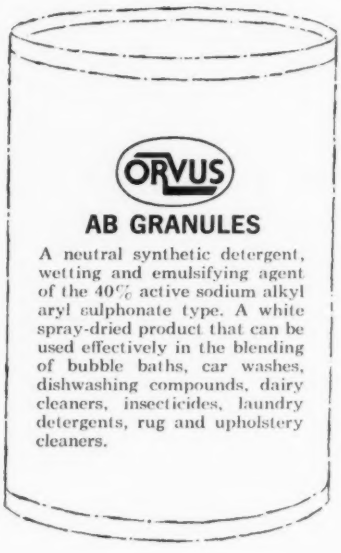
A neutral synthetic detergent and wetting agent whose active ingredient is mainly sodium alkyl sulphate. Excellent sudsing, wetting, dispersing and penetrating properties. Ideal for paste and liquid shampoos, bubble baths, liquid detergents, liquid car washes, liquid floor cleaners, insecticides, glass cleaners, rug and upholstery cleaners.



AMBER GRANULES

AMBER GRANULES

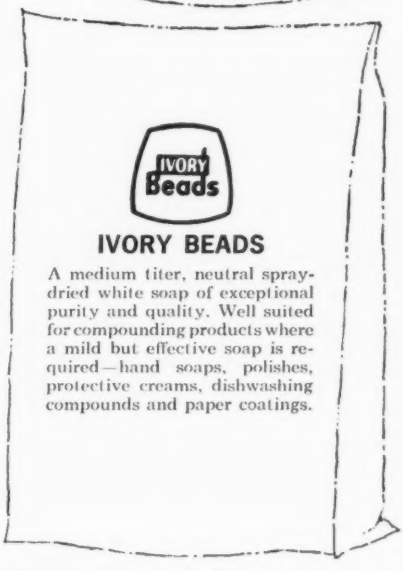
A neutral 88%, 42°C titer type soap of outstanding purity and uniformity. Well suited for the preparation of paste or gel-like products because of its high titer. Its granular form makes it ideal for powdered products. Excellent for the compounding of hand cleaners, paste cleaners, polishes, lubricants and coatings.



ORVUS

AB GRANULES

A neutral synthetic detergent, wetting and emulsifying agent of the 40% active sodium alkyl aryl sulphonate type. A white spray-dried product that can be used effectively in the blending of bubble baths, car washes, dishwashing compounds, dairy cleaners, insecticides, laundry detergents, rug and upholstery cleaners.



IVORY Beads

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A medium titer, neutral spray-dried white soap of exceptional purity and quality. Well suited for compounding products where a mild but effective soap is required—hand soaps, polishes, protective creams, dishwashing compounds and paper coatings.

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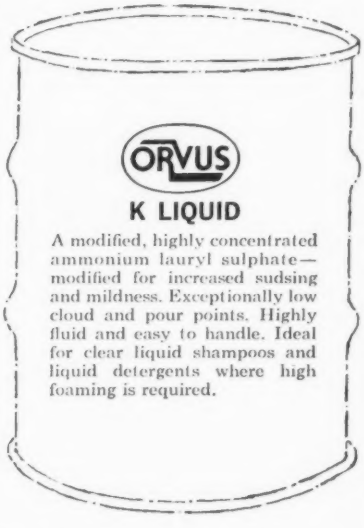

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K LIQUID

A modified, highly concentrated ammonium lauryl sulphate—modified for increased sudsing and mildness. Exceptionally low cloud and pour points. Highly fluid and easy to handle. Ideal for clear liquid shampoos and liquid detergents where high foaming is required.

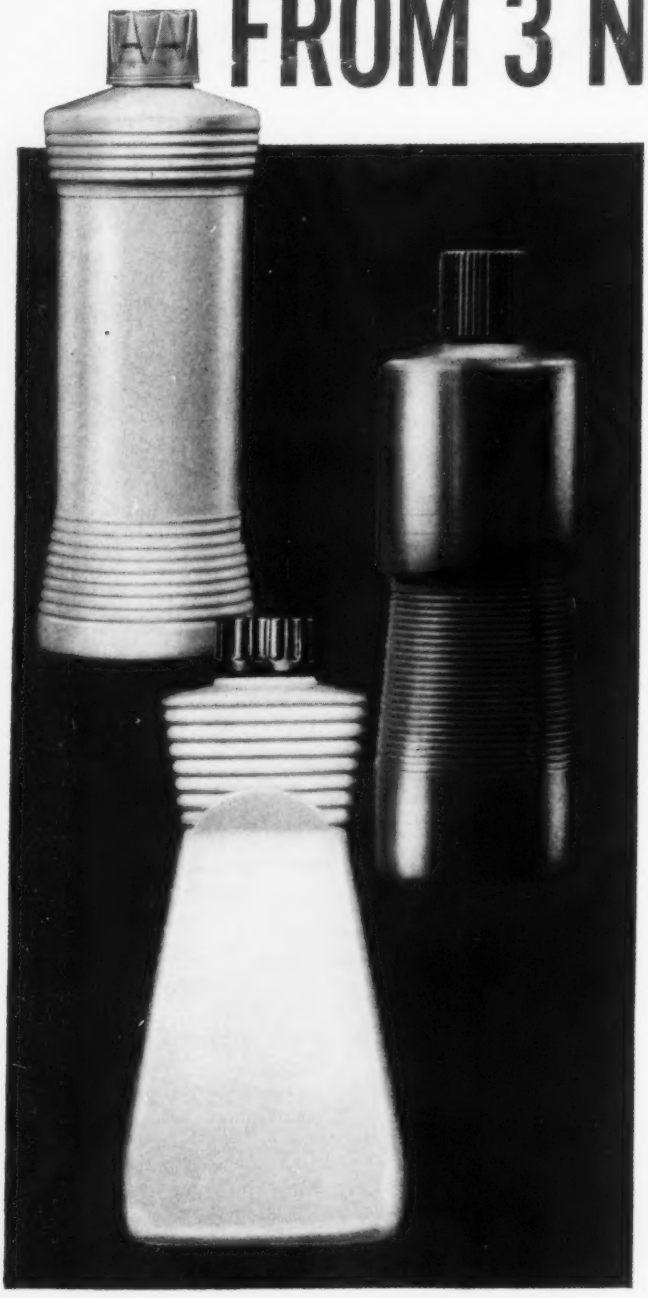
Detergents . . . Cleansers . . . Soaps . . .

Even with a late model washing machine housewife may not be completely satisfied with results. Possible cause may be phenomenon of soil redeposition. This aspect of detergency is even less understood than that of soil removal, some authorities say. See article beginning on page 43 of this issue.

Whirlpool Corp. photo

Aerosols
Detergents
Dishwashing compounds
Floor scrubs
Glycerine
Hand cleaners
Laundry soaps
Liquid soaps
Metal cleaners
Potash soaps
Scouring cleansers
Shampoos
Shave products
Soap powders
Starch
Steam cleaners
Medicinal soaps
Textile detergents
Toiletries
Toilet soaps and other detergent and soap products

CONTINENTAL OFFERS YOU PLASTIC BOTTLE SUPPLY FROM 3 NEW PLANTS!



Now is the time to change your packaging to plastic bottles. Consumers really want these handy, colorful new packages—it's because of their tremendous popularity that Continental is expanding its bottle facilities from **one** plant to **four,** with one objective in mind: the making of **better** plastic bottles in bigger numbers. Located across the country, new plants in Baltimore, Cincinnati and Los Angeles will join the Chicago plant in producing the widest variety of molded shapes possible, bringing you plastic bottles of every size, color and design, speeding your orders, and hurrying your deliveries. In short, all the skills and savings that make Continental the leader in packaging make it your best bet for plastic bottles! Call or write for information today.

CONTINENTAL CAN COMPANY
PLASTIC BOTTLE AND TUBE DIVISION
2930 N. Ashland Ave., Chicago 13, Ill.

Liquid Detergent Builders

Compatibility and stability of the silicate-polyphosphate mixtures in solution were tested at various ratios and concentrations

By Raymond Getty and William Stericker*
Philadelphia Quartz Co.
Philadelphia

ADDITION of appreciable amounts of sodium silicate to soaps for household use was a well established practice in the days prior to the emergence of synthetic detergents. The presence of sodium silicate builders was found to give improved removal of certain classes of soil and to prevent soil redeposition. (1) (2)

With the introduction of synthetic detergents it was assumed, apparently, that silicates were unnecessary. When synthetics alone proved to be inadequate, they were built with polyphosphates. These mixtures turned out to be corrosive to soft metals, particularly aluminum. So a sodium silicate was added to correct that fault. (3)

One of the difficulties in using larger amounts of silicate in built spray-dried detergents has been that such products packed in chipboard cartons developed insoluble residues on storage, particularly in warm, damp climates. The insoluble material was largely silica. Perhaps it was only natural that an attempt was made to keep the silica content low. However, our laboratory work has shown that in all except the cheapest containers less insoluble matter is produced in mixtures containing larger amounts of silicate. Storage tests show that the insoluble precipitate is caused by absorption of moisture which permits the polyphosphate in the mixture to act as an acid toward the silicate. Use of packages containing moisture barriers, addition of more alkaline silicates, and increase of the proportion of silicate to phosphate, brought marked and somewhat startling reductions in the amount of insoluble material formed. (4)

With liquid detergents, attempts to include silicate-phosphate builders ran into difficulties for much the same reason, except that here the water was already present so that precipitates formed if relatively large amounts of polyphosphate were used with small amounts of silicate. A research project was undertaken to find areas of stability for solutions containing both soluble silicates and polyphosphates.

Only sodium and potassium silicates and phosphates were investigated. Further work is planned in which representatives of different classes of synthetic detergents will be added. It is hoped that the areas in which the ternary mixtures are stable will fall within compatibility ranges for the binary mixtures.

Method

In this study to determine the compatibility and stability of silicate-phosphate mixtures, four sodium silicates and three potassium silicates were used. Their analyses appear in Tables I and II.

Three commercial phosphates were used: anhydrous tetrasodium pyrophosphate and anhydrous tetrapotassium pyrophos-

*Paper presented at annual meeting of Committee D-12 on Soaps and other Detergents, ASTM, New York, March 14.

Table I. Analyses of Sodium Silicates

Silicate	% Na_2O	% SiO_2	% Total anhydrous solids	SiO_2/Na_2O mol ratio
"E" **	8.6	27.7	36.3	3.32
"Star" **	10.5	26.3	36.8	2.58
"Starso" **	13.4	24.1	37.5	1.86
"Metso" Granular **	29.5	28.7	58.2	1.00

**Registered trademarks, Philadelphia Quartz Co.

Table II. Analyses of Potassium Silicates

Silicate	% Na_2O	% SiO_2	% Total anhydrous solids	SiO_2/Na_2O mol ratio
"Kasil" 88 **	9.05	19.9	29.0	3.45
"Kasil" 1.95 *	10.0	19.8	29.8	3.10
"Kasil" 1.62 *	12.0	19.4	31.4	2.53

*Not available commercially.

phate (both made by Food Machinery & Chemical Corp.), and anhydrous sodium tripolyphosphate Type II (slow hydrating) made by Victor Chemical Works Division, Stauffer Chemical Company. Analyses of the phosphates are shown in Table III.

Phosphate solutions were prepared by slowly adding the salt, with stirring, to hot water (about 80° C.), then quickly cooling the solution in a water bath to room temperature in order to minimize reversion.

The stock phosphate solutions ranged up to 20% for $Na_5P_3O_{10}$, up to 45% for $K_4P_2O_7$ and up to 10% for the $Na_4P_2O_7$. Since the solubility limit of $Na_4P_2O_7$ at room temperature is about 6%, the 10% solution was maintained at 50° C. to prevent crystallization. Stock solutions were used only on the day they were prepared. Solutions of $Na_5P_3O_{10}$ and $K_4P_2O_7$ were filtered before use.

The silicate-phosphate mixtures were made by combining portions of the stock solutions of each for storage in glass jars. The order of mixing was not important; however, in all cases reported the phosphate was added to the silicate. When preparing mixtures from a stock solution of 30% or more of $K_4P_2O_7$, an electric mixer was used to minimize local gelling.

Table III. Analyses of Phosphates

Phosphate	$Na_5P_3O_{10}$	$Na_4P_2O_7$	$K_4P_2O_7$
% Titratable Alkali			
to phenolphthalein as Na_2O	4.72	9.85	—
to methyl orange as Na_2O	11.96	13.37	—
to phenolphthalein as K_2O	—	—	11.51
to methyl orange as K_2O	—	—	17.00
Total	16.68	23.22	28.51
% P_2O_5	57.97	53.40	43.22
% Non-titratable M_2O and impurities (by diff.)	25.35	23.38	28.27

The prepared mixtures in closed glass jars were aged at room conditions (about 23° C.) for several months and their appearance frequently noted. The ingredients in the mixture were judged to be non-compatible if

1. An appreciable amount of turbidity or flocculent precipitate developed at any time up to three months; or
2. Crystals developed at any time during storage.

Care was observed to eliminate from consideration a small amount of finely divided floc that results from inherent impurities in commercial silicates and phosphates. Also, some insoluble material may possibly result from chemical attack on the glass by either phosphate or silicate. This mostly occurs as flat irridescent flakes.

Figures 1 to 7 show areas of compatibility and stability for several silicate-phosphate combinations as well as adjacent areas where precipitates or crystals form.

In the compatible mixtures well within the area shown, there was no separation on storage. Tables IV and V show the limits of sodium or potassium silicate solids concentrations which are compatible with different concentrations of each of the phosphates. Note that most of the sodium metasilicate-phosphate mixtures proved to be unstable, except for a small area with $K_4P_2O_7$.

1. Areas of Non-Stability

A. *Formation of Precipitates*

The graphs, Figures 1 to 7, show that at comparatively high

Table IV. Compatible Mixtures with Sodium Silicates

Phosphate	Concentration range (% silicate solids)			
% $Na_4P_2O_7$	"E"	"Star"	"Starso"	"Metso" Granular
2	2-27	2-22	NC	NC
4	2-10	2-5	NC	NC
5	2-7	2-4	NC	NC
% $Na_5P_3O_{10}$				
2	2-32	2-32	1-3, 18-34	NC
5	5-26	2-27	1-2, 16-25	NC
10	5-20	2-17	1-2, 10-14	NC
13	5-12	4-9	1-9	NC
15	5-8	NC	1-4	NC
% $K_4P_2O_7$				
2	2-34	2-34	1-22	1-5
5	4-23	2-19	1-17	1-5
10	4-21	3-17	1-14	1-11
15	5-20	3-17	1-12	8-11
20	7-19	4-17	NC	NC
25	10-15	4-15	NC	NC

NC — Not Compatible.

Table V. Compatible Mixtures with Potassium Silicates

Phosphate	Concentration range (% silicate solids)		
% $Na_4P_2O_7$	"Kasil" 88	"Kasil" 1.95	"Kasil" 1.62
2	4-24+	2-23+	1-24
4	5-18+	3-17+	1-17
6	7-11+	5-11+	1-11+
7	7- 9+	6- 8+	5- 8+
% $Na_5P_3O_{10}$			
5	6-21+	3-22+	2-23+
10	8-14+	6-15+	4-15+
12	9-12+	7-12+	4-12+
14	?	7- 8+	4-10+
16	?	?	5- 6+
% $K_4P_2O_7$			
5	4-25+	2-24+	1-14
10	6-22+	5-19+	3-13
12	7-20+	5-17+	3-10
14	9-19+	6-15	3- 6
16	10-18+	6-13	3- 5
18	13-16+	7-11	4- 5

Plus mark after figure means higher concentrations have not yet been investigated but probably will be compatible.

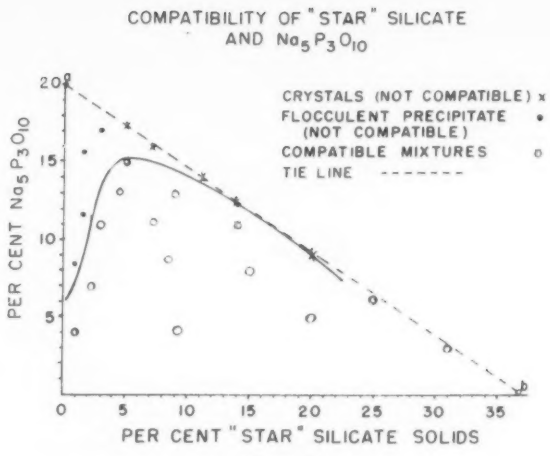


Figure 1

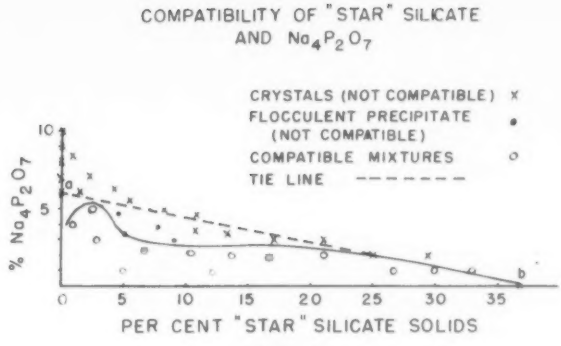


Figure 2

phosphate-low silicate concentrations there is a tendency to form flocculent, sometimes gelatinous, precipitates. This tendency decreases with colloidal silicates having a large amount of alkali relative to the silica content. For example, at a concentration of 15% $K_4P_2O_7$, "Starso" silicate is compatible with as little as 1% solids in contrast to minimums of about 3% "Star" solids and 5% "E" solids. However, the still more alkaline crystalloidal sodium metasilicate gives precipitates up to about 8% solids.

Phosphates at high concentrations act as acids toward the silicates, and at low silicate concentrations, particularly with the less alkaline ones, silica is precipitated. At higher silicate concentrations there is sufficient alkali present to protect the silica.

Another type of precipitate forms more slowly in some of the mixtures containing potassium pyrophosphate and the potassium silicates, especially "Kasil" 1.62. This type settles out as a white powdery sediment, leaving a brilliantly clear, colorless supernatant liquid. When the mixture is shaken, it becomes turbid but clears again fairly rapidly on standing.

The supernatant liquid from some of these mixtures was filtered off and the residue washed with ice cold distilled water until free of mother liquor. The ignited residue was analyzed. (See Table VI.)

Figure 3

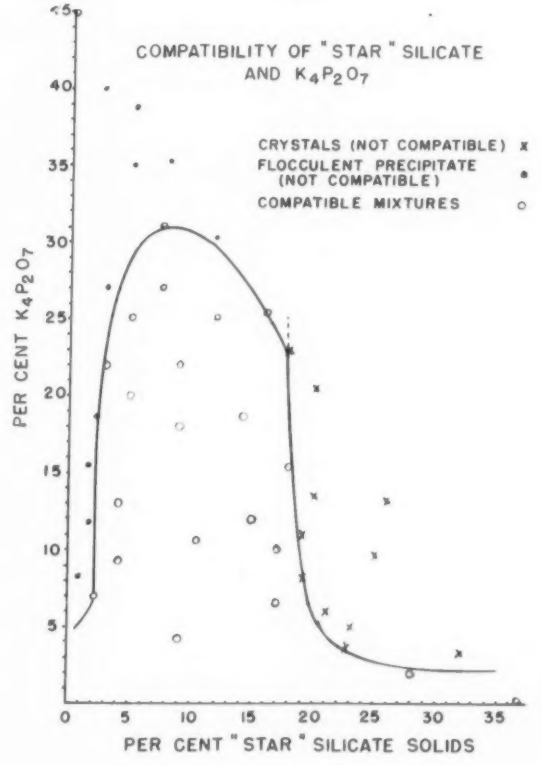


Figure 4

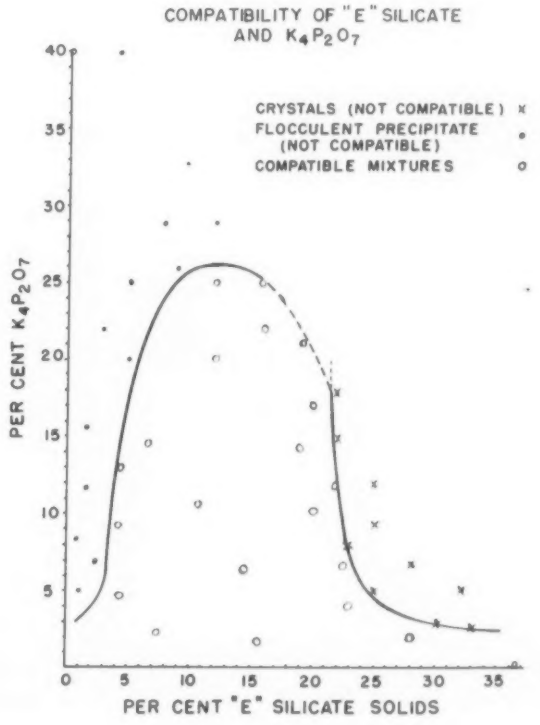


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Table VI. Precipitates from Potassium Systems

	Composition of original mixtures			
	1	2	3	4
% Silicate solids	12% "Kasil" 88	23% "Kasil" 88	15% "Kasil" 1.62	10% "Kasil" 1.62
% Phosphate	21% $K_4P_2O_7$	9.3% $K_4P_2O_7$	23.2% $K_4P_2O_7$	30.5% $K_4P_2O_7$
	Annalyses of sediments			
% Sediment (approx.)	0.016%	0.025%	0.063%	0.055%
Composition (dry basis)				
% SiO_2	77.02	34.29	2.07	0.91
% P_2O_5	15.06	22.39	49.95	56.37

On a weight basis the amount of dried sediment was less than 0.10% resulting in no significant change between the composition of the original mixtures and the supernatant liquids. The sediments show a high SiO_2 content from mixtures originally containing "Kasil" 88 (3.45 SiO_2/K_2O), and a low SiO_2 but high P_2O_5 content from mixtures originally containing "Kasil" 1.62 (2.53 SiO_2/K_2O). There was no evidence of any calcium, but from experience it is assumed that the undetermined matter is largely alumina and titania.

B. Formation of Crystals

Mixtures of "E" silicate and $K_4P_2O_7$ develop crystals when the silicate concentration is increased to about 22% solids. (Fig. 3). With the use of the more alkaline silicate, crystals appear at lower silicate concentrations. Thus at 18% $K_4P_2O_7$ crystals appear at 22% "E" solids, 18% "Star" solids, 14% "Starso" solids and 12% "Metso" Granular solids. The boundary line between areas of stable solutions and crystal formation drops steeply from the above concentrations to about 5% $K_4P_2O_7$, then curves sharply to the maximum silicate solids concentration at about 2 to 3% $K_4P_2O_7$.

Crystals occur in water solutions of $Na_4P_2O_7$ alone at concentrations of 6% or above. With the addition of sodium silicates, crystals appear at lower concentrations of $Na_4P_2O_7$ (Fig. 2). In general, crystals form along or above a tie line (a-b) extending from 6% $Na_4P_2O_7$ to 35% solids of "E," "Star," or "Starso" silicate. Here again the area of crystal formation increases with increasing alkalinity relative to silica. Below the tie line, some stable mixtures are obtained with "E" or "Star" but not with "Starso" silicates.

With mixtures containing $Na_5P_3O_{10}$, crystals occur with "E" and "Star" (Fig. 1) silicates at relatively high phosphate-low silicate concentrations, i.e., above 15% $Na_5P_3O_{10}$, and up to 6% silicate solids; also partially along a tie line (a-b) from 20% $Na_5P_3O_{10}$ to 36% silicate solids. Below the tie lines, stable mixtures are obtained with "E" or "Star" (Fig. 1) but not with "Starso" silicate.

The crystals formed in several of the mixtures were analyzed. The supernatant liquid was filtered off and the remaining crystals were washed with a limited amount of ice cold distilled water to remove mother liquor from the surface. After air drying the crystals were ground to a powder and analyzed. (Table VII)

It is clear that the crystals which separate out of these silicate-phosphate solutions are in all cases straight phosphates. There is no evidence of mixed silicate-phosphate or straight silicate crystals. In the above examples #1 and #2 are sodium pyro-phosphate decahydrate and #3 and #4 are the hexahydrate of tri-polyphosphate.

2. Stable Mixtures

The area of stable mixtures lies between the regions where flocculent precipitates and crystals occur. Where no crystals are formed the area lies under a tie line connecting the highest concentration of the phosphate and the total silicate solids content.

The areas of stability depend upon the type and solubility of the phosphate and the SiO_2/alkali metal oxide ratio of the silicate. Of the sodium silicate mixtures the least stable are those with $Na_4P_2O_7$ (Fig. 2); those with $K_4P_2O_7$ are the most stable (Fig. 3, 4) and the $Na_5P_3O_{10}$ mixtures are intermediate (Fig. 1). The stability increases with an increase of the SiO_2/Na_2O ratio for mixtures with all the phosphates.

Mixtures with potassium silicate and the phosphates show that with $Na_4P_2O_7$ and $Na_5P_3O_{10}$ the stability decreases as the SiO_2/K_2O ratio increases ("Kasil" 1.62 > "Kasil" 1.95 > "Kasil" 88). $Na_5P_3O_{10}$ is more compatible with each of the potassium silicates than is $Na_4P_2O_7$.

The potassium silicate solutions used were not as concentrated as the sodium silicates. This has prevented a full study of the area of compatibility. Also, part of the area in which crystals might develop has been eliminated thereby.

(*Turn to Page* 105)

Table VII. Crystal Formation

	Composition of original mixtures			
	1	2	3	4
% Silicate solids	25 E	25 E	6 E	11 "Star"
% Phosphate	10 $K_4P_2O_7$	10 $K_4P_2O_7$	16.7 $Na_5P_3O_{10}$	14 $Na_5P_3O_{10}$
	Analyses of sediments			
% Titratable alkali as Na_2O				
to phenolphthalein	4.42	4.66	3.25	3.32
to methyl orange	9.52	9.42	10.09	9.95
Total	13.94	14.08	13.34	13.27
% SiO_2	0.50	0.49	0.21	0.13
% P_2O_5	32.00	31.12	44.54	44.66
% Ignited loss	40.24	39.16	22.81	22.84

Estimation of

Soil Redeposition by Detergents

By Albert R. Martin* and Richard C. Davis,
Whirlpool Corp.
St. Joseph, Mich.

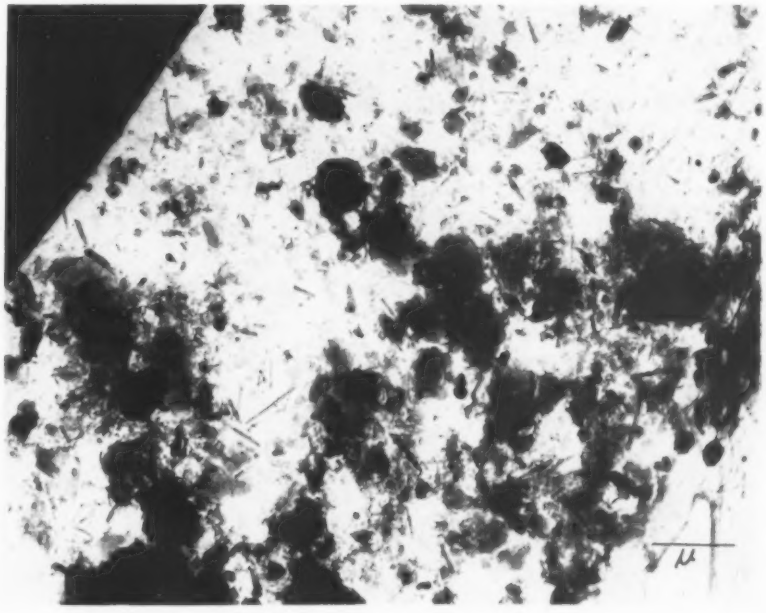
SOIL redeposition is an aspect of detergency that we understand even less than we do soil removal itself. And our knowledge about the latter certainly leaves much to be desired. In estimating the efficiency of detergents and detergent systems, it is the opinion of the authors that far too much attention is generally paid to the relatively easy task of soil removal, while the much more difficult task of inhibiting soil redeposition is largely ignored. Nevertheless, it is this very phenomenon of soil redeposition that causes more dissatisfaction with the results of home laundering than any other factor. This, at least, has been our experience.

The literature on this subject has been collected in a comprehensive bibliography by Kramer, et. al., for D-12 several years ago (1). It is not our purpose in this paper to review any of this literature other than to point out that most methods for estimating soil redeposition have been based upon the use of such artificial materials as carbon black and graphite. We, ourselves, in this task group have tested such a method. The results seemed to be in the right direction and satisfactory discrimination was shown between two detergents, one with, and one without added C.M.C. Nevertheless, the lack of realism in the soil formulation always leaves an avenue open for attack on the method by anyone who is displeased with the test results. For this reason, we decided to make one more effort to develop a test soil for this purpose that would meet the criteria of realism, validity, precision, accuracy and discrimination. While it is certainly not our claim to have achieved this goal, we would like to nominate a likely candidate and review some of its qualifications. It is our hope that the data that follow will be sufficiently provocative to encourage the members of D-12 to make a new effort to develop a test procedure in which the industry has confidence.

Principal objection to the use of carbon black or of graphite in soil redeposition studies is that no one has demonstrated that either material occurs to any significant extent in normal clothes soils. A generation ago when soft coal was being burned everywhere, the picture may have been different.

Investigations in our laboratory of actual examples of redeposited soil have been published recently by Powe (2). Electron micrographs of redeposited soil on cotton fibers were made. Careful study of these micrographs led us to the conclusion that the predominant particulate soil present is clay. One certainly cannot deny that clay is an ubiquitous material that makes up a large fraction of all topsoil and therefore must make up a large fraction of the particu-

Electron micrograph of redeposited soil on cotton fibers.



*Paper presented at annual meeting of Committee D-12 on Soaps and Other Detergents (ASTM), New York, March 14.

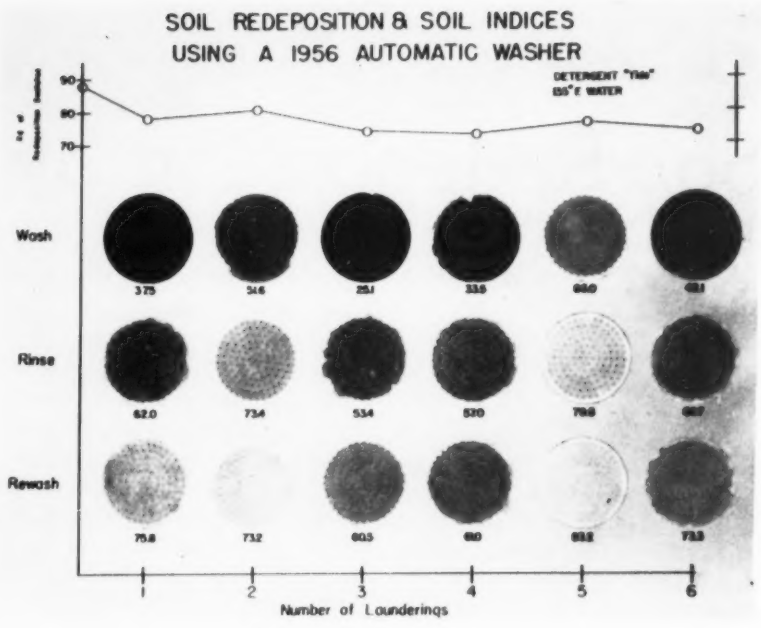
late soil on clothes. For this reason, we felt that clay should be investigated as a possible model soil since it meets the criterion of realism.

Experimental Procedures

A. *Experiments with Naturally Soiled Garments*

After much trial and error, it was learned that the degree of soiling encountered in home laundry varies over a wide range, and that only the heavily soiled or moderately soiled loads are worth working with. In the case of lightly soiled loads, very little soil redeposition occurs under normal washing conditions. We also learned that heavily soiled loads could not always be selected by inspection. Colored loads, for example, can hold a large quantity of soil without looking particularly dirty.

As a rough criterion of the degree of soiling for comparative purposes, we developed a test that we call the "Soil Index." (5) At the end of the wash cycle, a sample of the wash water is taken. After it has cooled to room temperature, a 250 ml aliquot of this wash water is filtered by suction through a 7 cm No. 4 Whatman filter paper using a Buchner funnel. The filter paper and the residue filtered from the wash water are allowed to air dry and the reflectance of the paper is determined. This reflectance value decreases proportionally with the quantity of soil, so long as the washing conditions are constant. By use of this criterion, we were enabled to correlate to a fairly satisfactory degree experiments done with home laundry from various households and done at different times.



It may be correctly argued that a simple measurement of the light transmission of the wash water with a spectrophotometer would give the same information with less work. We found an advantage in the filtration procedure, however: it enabled us to spot a "dye bleed" immediately. This is a particularly dangerous pitfall for the unwary in

Table I. Conditions for Experiments Described

Exp. No.	Figure	Table	Water	Detergent	Conc.	Additive	Wash Time	Wash Temp. °F	Rinse Time	Rinse Temp.	Soil	Water Fabric Ratio	Soil Conc.
1	1, 2	II	Deionized				30	75			Clay	25-1	0-14 gm/Liter
2a	3	III	Soft	25°-27° C Titre Soap	0.25%		10	120	3	100	Natural	17-1	
2b	3	III	Soft	" "	0.25%		10	120	5	120	Clay	35-1	" "
3a	4	IV	8 g/g	Lab Mixed	0.25%		10	120	3	100	Natural	17-1	
3b	4, 8	IV	8 g/g	" "	0.25%		10	120	5	120	Clay	35-1	" "
3c	5	V	8 g/g	" "	0.25%	1% CMC	10	120	3	100	Natural	17-1	
3d	5, 8	V	8 g/g	" "	0.25%	1% CMC	10	120	5	120	Clay	35-1	" "
3e	6	VI	8 g/g	" "	0.25%	5% CMC	10	120	3	100	Natural	17-1	
3f	6, 8	VI	8 g/g	" "	0.25%	5% CMC	10	120	5	120	Clay	35-1	" "
3g	7	VII	8 g/g	" "	0.25%	10% CMC	10	120	3	120	Natural	17-1	
3h	7, 8	VII	8 g/g	" "	0.25%	10% CMC	10	120	5	120	Clay	35-1	" "
4a	9	VIII	Deionized	Built Anionic	0.25%		10	120	5	120	Clay	35-1	" "
4b	9	VIII	Soft	" "	0.25%		10	120	5	120	Clay	35-1	" "
4c	9	VIII	8 g/g	" "	0.25%		10	120	5	120	Clay	35-1	" "
4d	9	VIII	8 g/g	" "	0.25%		10	120	5	120	Clay	35-1	" "
5a	10	IX	8 g/g	Built Nonionic	0.35%		10	120	—	—	Clay	17-1	Variable
5b	11, 12	X	8 g/g	" "	0.35%		10	120	3	100	Natural	8.5-1	
5c	11, 12	X		" "	0.35%		10	120	3	120	Clay	17-1	Variable

Table II. Effect of Clay Deposition on Reflectance and K/S of Cotton Cloth

Mgms Clay/gm Cloth	Reflectance	K/S
0	84.0	0.015
9.9	74.4	0.044
18.7	66.8	0.082
28.9	60.9	0.125
37.0	58.1	0.151
42.8	55.5	0.178
56.1	51.7	0.226
58.1	51.0	0.235

Table III. Comparison of Redeposition of Clay vs. Natural Soil in 0.25% Soap Solution

Wash Number	Reflectance of Redeposition Swatches	
	Natural Soil	Clay
Original	91.5	92.6
1	89.8	92.0
2	89.7	90.6
3	89.2	90.0
4	89.2	88.7
5	88.4	88.6
6	88.6	87.7
7	88.8	87.2
8	89.0	87.0
9	87.1	86.5
10	86.5	86.1

this kind of experimental work. Dye bleeding in home laundering is a much more prevalent occurence than the dyestuff industry is willing to admit.

Soil redeposition in the laundry loads was determined in the usual manner by pinning white cotton fabrics to the garments and determining the loss in reflectance using a Gardner Color Difference Meter. The drop in reflectance due to soil redeposition in any one wash bath is too small for significant data to be obtained. Results must be observed after the same fabric has been washed repeatedly with soiled clothes. We find that ten washes are usually required to establish a definite trend curve. If the redeposition is very severe, five cycles are sufficient.

B. *Experiments with Clay as a Model Soil*

We selected a clay for this work that is dark colored and that is commercially available in quantity. The clay we selected for this preliminary work is sold under the name "Bandy Black" by Spinks Clay Co., Paris, Tenn.

Fresh stock suspensions containing 1 g/liter of clay were made up for each experiment. No suspensions were used that were more than eight hours old. The suspensions were made in the same water being used in the experiments. Aliquots of the stock solution were taken to give the desired soil concentration.

The experiments with clay soil were made in a "Terg-O-Tometer." The experimental conditions for the various experiments are shown in Table I.

Results

Experiment 1, Correlation of Clay Content of Cotton with Reflectance

It was the object of this experiment to test the accuracy of the method. An accurate method of measuring soil redeposition should yield a result (% reflectance) that is proportional to the amount of soil deposited on the cotton. In this experiment, we used a gravi-

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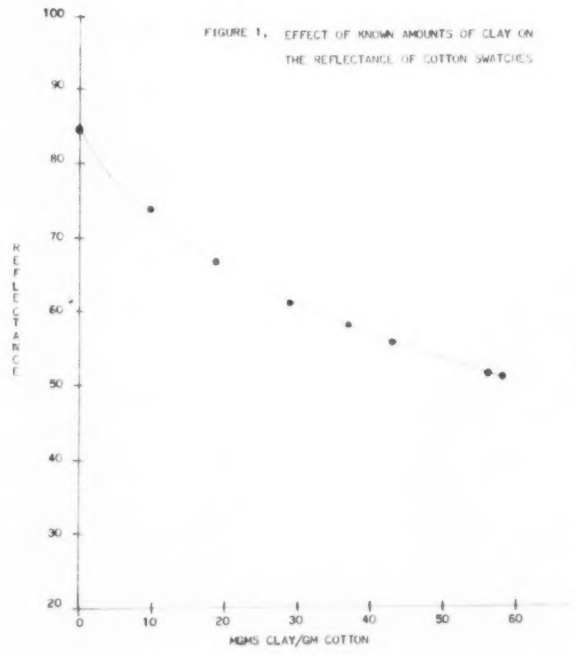
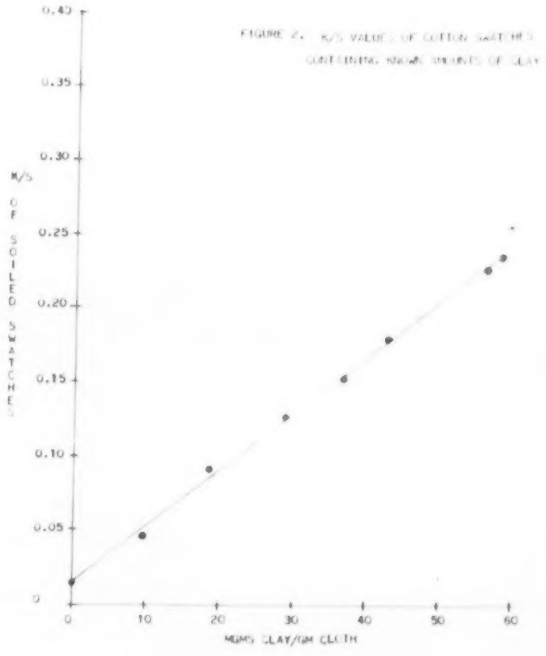
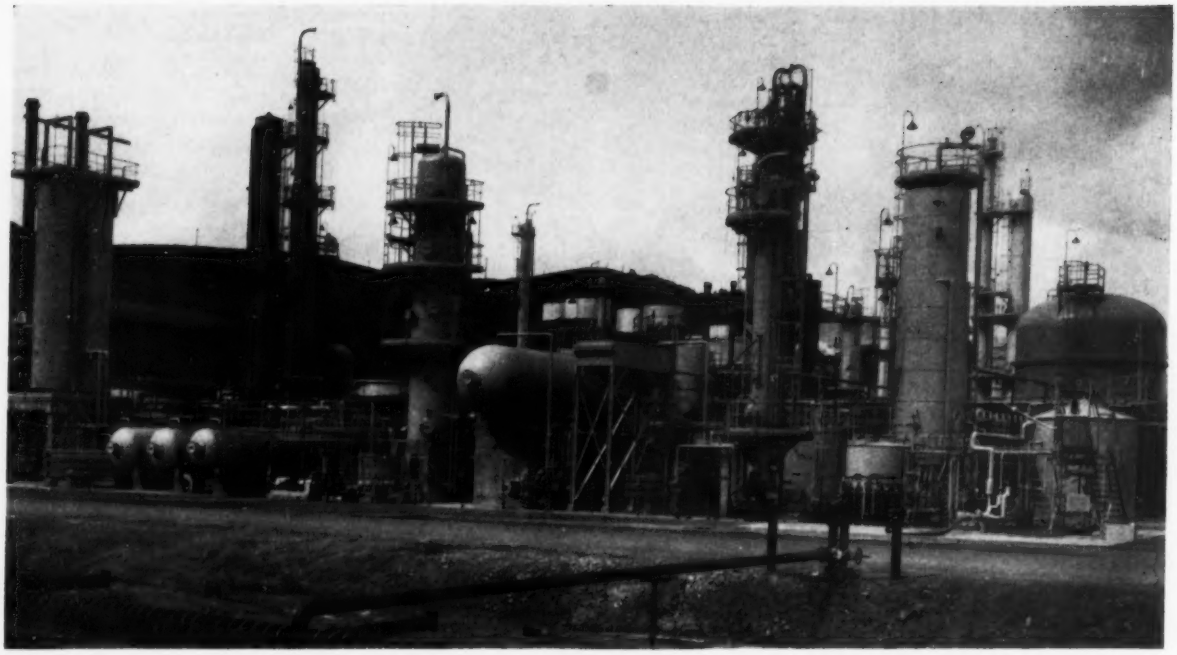






World's largest detergent polymer plant of Oronite Chemical Co., San Francisco, went on stream last month. New plant, at Richmond, Calif., features an improved unit for alkylation, based on process developed by Oronite's research group.

Oronite's New Detergent Alkylate

New high molecular detergent alkylate of high foaming and detergent power now made at largest detergent polymer plant.

A NEW high molecular detergent alkylate of higher foaming and greater detergent power than conventional dodecylbenzene products is being introduced this month by Oronite Chemical Co., San Francisco. The detergent polymer used to make the new alkylate is produced at Oronite's recently completed plant at Richmond, Calif., which the firm believes to be the "largest detergent polymer unit in the world." The facilities use a novel process developed by California Research Corp., Oronite's research affiliate, to manufacture the material, which will be marketed under the trade name "Alkane 60."

View of detergent evaluation laboratory at new Oronite plant.

The project leading to development and introduction of the new alkylate involved construction of a new plant, development of a new process, and a number of other steps, representing an enormous investment of time, manpower, and money. What prompted Oronite to embark on such an undertaking? Primarily the demand for improved detergent products.

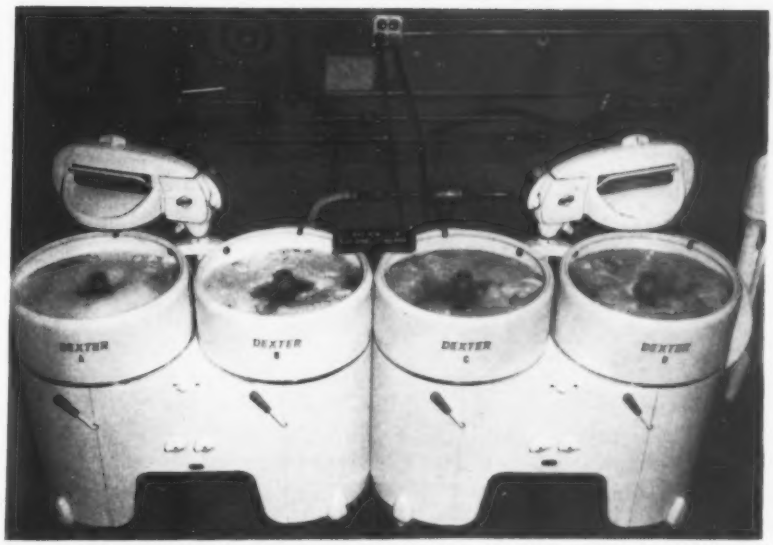
The rapid growth of the detergent industry was triggered in the 1940's by emergence of low cost petroleum derived hydrocarbons for the manufacture of surface active agents. Since then alkylbenzenes and their sulfonates have continued to be the work horse of detergent manufacture, currently accounting for about half of the total synthetic organic surfactants

sold in the United States. California Research has been a leader in the development of this type of detergent raw material, while Oronite has pioneered bulk shipment and worldwide marketing of these surfactants.

Compared with modern alkylates the early alkylbenzene product was a crude material with a wider boiling range, yielding sulfonates of poorer color and odor properties and higher oil content. Oronite's close contact with customers' formulation problems and needs combined with California Research Corp.'s knowhow yielded products improved in quality and performance. A dodecyl benzene product was developed which was predominantly composed of alkylbenzenes with side chains ranging from C_{10} to C_{14}. This material was believed to give the best overall performance in detergent formulations. In recent years, however, industry yielded to the desire for improved quality and sulfonation characteristics to the point where alkylbenzenes of higher molecular weight were practically eliminated from detergent raw materials at the expense of performance characteristics.

To fill the need for higher molecular weight alkylbenzenes, Oronite entered the market with "Alkane 160" with an alkyl side chain averaging 13 carbon atoms. This product did not meet the firm's quality standards and could not be produced in quantities sufficient to meet customers' demands. An improved manufacturing process was needed which would yield a product combining the performance properties of "Alkane 160" with the high quality of the earlier "Alkane 56." With the introduction of "Alkane 60" this aim has been realized, Oronite believes.

A brief examination of the new material's properties will show reason for this belief. "Alkane 60" has a higher distillation range than dodecylbenzene alkylate which reflects its higher molecular weight. The higher molecular weight, in turn, is responsible for the improved performance characteristics of the sulfonate. Good color and bromine number of the new material indicate absence of impurities which might cause poor color and odor and high oil content in the sulfonates.



One of battery of washing machines at new Oronite plant to test foamability of detergent sulfonates and surfactant formulations under controlled conditions.

Nuclear magnetic resonance: for research on structure of detergent polymers and alkylates. Units are part of research setup at new Oronite plant in Richmond.

Pale sulfonate color such as exhibited by "Alkane 60" sulfonates is required to meet the high color standards for finished formulations, destined for the household detergent market. Low oil content after sulfonation indicates high sulfonation yields and means lower processing costs for the detergent manufacturer. Furthermore, low oil contents are desirable for high foaming power in the finished formulation, since unsulfonated oil acts as a defoamer.

Oleum is the sulfonating agent most widely used to make alkylaryl sulfonates. A less common manufacturing method utilizes sulfur trioxide. For oleum sulfonation no clear cut relationship has been established between content of unsaturated compounds and color and oil content of the sulfonate. However, all other inspec-

(*Turn to Page* 184)

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HOUSEHOLD

EVEN though the removal of obvious dirt reduces the problem of microbial contamination, we are aware that bacteria remain, even when there is no obvious contamination. Many manufacturers are therefore modifying their cleaning preparations to increase their antimicrobial effectiveness. Since the problem is more nebulous than in the case of visible dirt, the development of satisfactory testing methods is even more difficult. We shall discuss a few of these. One of the most common of these test procedures is the phenol coefficient. This test determines the concentration of the germicide which will kill a test organism (Hopkins strain 26 of *Salmonella typhosa*) in ten minutes but not in five minutes, when it is suspended in the prescribed nutrient medium. Simultaneously the concentration of U.S.P. phenol required to kill within the same time limits is determined. It is necessary to determine phenol each time in order to allow for variations in the vigor of the test organism. The ratio of the dilution possible with the experimental germicide to that obtained with phenol is the phenol coefficient. This test has a certain usefulness. Obviously a compound which can kill at a dilution ten times greater than phenol is inherently a more effective germicide, under these test conditions. Residual antibacterial action which will continue to operate between applications of the germicide solution will not be indicated by the phenol coefficient test, since this test depends in no way upon the substantivity of the germicide to some particular surface. A germicide strongly substantive to a particular surface will be adsorbed from the solution and continue to suppress the rapid growth of bacteria. Another substance which is inherently a stronger germicide but which is easily rinsed away will not prevent the proliferation of bacteria which we desire to prevent.

A test which is probably more applicable to a hard surface cleaner is the AOAC use dilution test. In this procedure a suspension of *Salmonella choleraesuis* is applied to a standard steel cylinder and allowed to dry. These cylinders represent the contaminated surface. They are immersed in various concentrations of the test germicide selected on the basis of the standard phenol coefficient. Lack of growth in sub-culture tubes confirms the phenol coefficient. In view of the variety of surfaces to be cleaned by home cleaning agents, an extension and modification of this type of test appears desirable. The difficulties of developing a procedure of satisfactory reproducibility are considerable, if surfaces are to be used with varying degrees of roughness and porosity.

The desirability of having a substantive germicide which is adsorbed to the surface and provides a residual antibacterial effect between applications will depend on the use to which the product is put. For washing clothes and bed linen, for example, a substantive germicide is desired. A garment so treated will tend to suppress the growth of bacteria which are transferred from the skin along with perspiration. It is this growth which results in the development of odor. For such applications, the phenol coefficient is meaningless, since the substantivity of the germicide is not involved.

For the cleaning of floor tile, some residual activity between

CLEANSERS

By David Justice*
Lever Brothers Co.
New York

Part II

cleanings is desirable, but even the AOAC use dilution test does not yield any information about the substantivity of the germicide. For this purpose it will be necessary to develop methods to indicate the amount of germicide that remains on the surface from a normal cleaning procedure. It is always possible, of course, to use some chemical or indicator test, or to work with radioactive germicide, to get some measure of the amount of germicide on the surface. However, these tests will not tell us whether the germicide is adsorbed to the surface in the form which allows it to be germicidally active. Tests of biological activity of adsorbed germicide can be made by placing the test material in contact with an agar plate which has been seeded with some test organism such as *Staphylococcus aureus*. Inhibition of bacterial growth immediately under the test sample is an indication that the adsorbed germicide is still biologically active. Another technique can be used to demonstrate the biological effectiveness of germicide remaining on a hard surface such as tile. A bacterial culture, such as *Staphylococcus aureus*, in nutrient broth, is placed on a tile sample treated with the germicide and incubated overnight. The number of bacterial cells initially added is known and the surviving cells after overnight incubation are determined. If the number remains the same or is less than the initial count, there is reason to believe that the treated surface effectively inhibits bacterial growth. In the case of untreated tile the number of bacteria greatly increases on overnight incubation.

Mechanical dishwashers present a problem quite different from that encountered with counter tops, sinks and floors. Here the major part of the control of bacterial populations is effected by the high temperature of the water. It is probable, however, that in many homes the temperature of the hot water is not high enough, or the water cools off in use, so that control is inadequate. Many products which are designed for use in automatic dishwashers now contain some dry bleach which now serves as a source of active chlorine. These products are very active germicides and help control bacterial populations where the temperature is insufficient. It is interesting that such compounds perform the dual role of bacterial control and elimination of spotting on glassware.

Tests for Skin Mildness

Before a product is actually marketed the very important question of mildness in use must be answered. There are many convenient laboratory tests of mildness in which the test product is applied to the skin of mice, guinea pigs or rabbits and its effect on the skin judged both visually and histologically. These preliminary screening tests are quite valuable in the preliminary steps of product development but a final assessment of mildness cannot be made until the product is tested on human subjects. A convenient and reliable testing procedure is the arm immersion test in which the subject sits between two parallel troughs with one arm immersed in a solution of the test product and the other arm in a solution of a control product. The arm should be immersed so the entire forearm is covered by the test solution since the inside of the arm near the elbow provides the most sensitive indication of an irritation potential. The arms are immersed several times daily for several days and indications of irritation such as itching or erythema are recorded. The size of the panel used will depend on the magnitude of the difference between the control product and the test material. In some cases statistically significant results can be obtained with a panel of a dozen subjects but to measure small differences as many as thirty subjects may be required.

In addition to the mildness in use, possible toxic effects that result from accidental ingestion should be considered. The LD_{50} should be determined by the standard method recommended in the various model bills that have been drafted for the labeling of hazardous substances. A committee of the CSMA has been doing some excellent work in drafting model legislation for this purpose.

Summary

The development of new household cleaning products and the improvement of existing cleaners proceeds in a logical series of steps: Controlled laboratory tests, practical evaluation under laboratory conditions, and finally consumer evaluation in the field, to determine the effectiveness of the product in removing visible soil. At each stage the appropriate statistical tools should be used. The question of destroying or controlling micro-organisms by the use of germicidal agents should also be considered. The problem is not nearly so acute in the home as it is in restaurants and hospitals, and also the effects of such agents will not be readily apparent to the consumer. Nevertheless, there appears to be an increasing tendency on the part of manufacturers to incorporate this added characteristic to cleaning agents designed to be used in the home.★★

*Paper presented at the 46th annual meeting of the Chemical Specialties Manufacturers Association, Washington, D. C., Dec. 8, 1959.

Unique Soap Bacteriostat

By W. J. Lennon*, T. E. Furia, and H. W. Zussman

Geigy Industrial Chemicals
Division of Geigy Chemical Corp.
Ardsley, N. Y.

Part II

FOR evaluation of deodorant properties of TCSA, the method recently described by Linfield (3) has been followed. An all male test panel was selected on basis of ability to differentiate between a commercially available deodorant soap bar and an identical (except for color) non-deodorant bar. The panel was then instructed to wash both armpits daily with "Ivory" soap for one week. Thereafter each morning for five days, one axilla was washed with a soap containing 0.5% TCSA and the other axilla with an unmarked commercially available deodorant bar with high consumer acceptance, as a standard. On retiring, each panel member rated the armpits of his dress shirt or undershirt for odor: left better, right better, both equal. Fifty percent of the panel members used TCSA in the left axilla and the rest used TCSA in the right axilla. The results are recorded in Table 6 and are summarized in two different ways. Method B indicating personal preference is considered more meaningful and shows a better than 2:1 preference for the TCSA bar.

TCSA as a shampoo additive is promising in control of dandruff. TCSA soap bars have also been reported clinically effective in control of acne, folliculitis, carbunculitis and impetigo (4).

Formulation of TCSA in toilet soap bars or in liquid preparations presents no special problems. TCSA may be processed in conventional soap making equipment; it blends uniformly and has no detrimental effect on texture, color or perfuming of the finished bar. Sensitivity to iron is relatively low, presenting no problems if the usual precautions are taken. Alkaline bars have poorer light stability than neutral ones; light stability, in any event, is superior than for the bisphenols. "TINOPAL GS," (Geigy Chemical Corp.) a brightening agent, will mask photo-catalyzed discoloration. Photodecomposition is a surface effect and does not materially affect the bacteriostatic activity of the soap.

For liquid formulations, TCSA is best incorporated by predispersing in hot water or predissolving in triethanolamine or nonaethyleneglycol. Liquid formulations may be stabilized against light by blanketing the solution with nitrogen or adding bisulfite, hydrosulfite or anti-oxidants; lowering pH will also retard photodecomposition. Amber glass, wrap around labels, and ultraviolet absorber coatings are also helpful. In filling containers, air space should be minimized. With proper precautions, liquids containing TCSA have a satisfactory shelf life.

Hot detergent wash liquors, especially when fortified with chlorine bleach, will remove or destroy most bacteria encountered in the average home laundry load; the laundry, however, is still susceptible to recontamination. Conceivably, bacteriostats may contribute to the degerming action of the laundering process, especially if washing temperatures continue their present downward trend.

The special value of TCSA in laundering is its adsorption and retention on many textile materials which will then exhibit reduced susceptibilty to bacterial contamination. This should undoubtedly be of value in hospitals and institutions for reducing danger of cross-infection in handling soiled laundry and may be of interest in common facility washing machines. In the home laundry, the principal value of TCSA may be in control of odor development on soiled diapers (possibly also prevention of diaper rash), underwear, bed linens and similar articles.

For home use, TCSA is most conveniently combined with detergents; it may also be applied in the rinse cycle, along with cationic softener or starch. In the power laundry, TCSA may be added with ammonium or zinc silicofluoride sour.

Substantivity of TCSA is highest for nylon, followed by wool and then cotton, rayon and resin-treated cotton. Polyester, acrylic and acetate fibers have negligible affinity for TCSA. Substantivity also varies with the surfactant system in which TCSA is used. If bacteriostatic activity on cotton treated with a given amount of TCSA in anionic detergent is rated arbitrarily as 100, then nonionics

*Based on paper presented at 46th annual meeting, Chemical Specialties Manufacturers Ass'n, Washington, D. C., Dec. 9, 1959.

will rate 70-90 and cationics, 20-30. Retention of TCSA by the fabric depends, too, on the degree of dispersion or solubilization of the bacteriostat. Optimum temperature for adsorption on cotton from anionic detergent is 120-140°F, but adsorption is still satisfactory at lower or higher temperatures. TCSA adsorption on cotton from anionics is not materially affected by pH variation in the range 5-11, with greater affinity at the lower pH, however.

Laundry Use Properties

Chemical analysis of cotton washed with anionic detergent containing 0.15% TCSA at 120-140°F under simulated home laundry conditions indicates about 20% retention of TCSA by the fabric. On a single wash, the TCSA concentration on cotton may go as high as 15-20 ppm, with leveling off at less than 100 ppm after as few as five washes. With mixed loads of cotton and nylon, pickup of TCSA by cotton will be reduced. Where nylon does not exceed 20% of the load, sufficient TCSA will adsorb on the cotton to show some benefit.

TCSA adsorbed on cotton is stable to hypochlorite bleach; the bacteriostat is, however, readily attacked by hypochlorite in solution. The consumer should be instructed to add bleach at least three minutes after the wash cycle has been started. Activity is usually lowered by application of cationic softener rinse. TCSA has a slight brightening effect on neutral or alkaline fabrics due to its bluish fluorescence. Brightening action is not sufficient to warrant reduction in conventional brightening agents used in laundry detergents.

As previously noted, TCSA treated fabric has limited light stability and should not be exposed for any extended periods of time to strong direct sunlight. Fabrics containing high levels of TCSA will show a significant loss in bacteriostatic activty on two or more hours exposure to direct sunlight. The characteristic fluorescence of the compound diminishes proportionately and some slight discoloration may also occur. Neutral or acid soured fabrics exhibit better light stability than alkaline fabrics. Stability of TCSA on textile fabrics if exposed to indirect sunlight is satisfactory. It is felt that for many applications, such as treatment of diapers, bed linens, etc., TCSA will give satisfactory performance if outdoor drying in strong sunlight is avoided.

Most methods for demonstrating anti-microbial activity of fabrics are sensitive to the behavior of the bacteriostat with respect to desorption from the fabric and diffusion into the test medium. This applies also to TCSA. Accordingly, interpretation of laboratory findings in terms of practical significance is not without complications.

Lab Test Methods

Using the conventional agar plate method, it is possible to demonstrate 10-20 mm zones of inhibition vs. *Staph. aureus* and *Proteus vulgaris* with cotton containing 10 ppm or more TCSA. No activity vs. *E. coli* can be demonstrated even with 100 ppm TCSA on the cotton. With nylon or wool, which have greater affinity for TCSA than does cotton, no activity can be shown against any of these three organisms by this method. However, using sensitivity test medium (Oxo), which permits more diffusion of the bacteriostat, it does become possible to

Table 6. Underarm Deodorant Soap Evaluation Tests

Code: F — prefers 0.5% TCSA bar
G — prefers comparison bar
C — considers both equal

Panelist	1st	2nd	3rd	4th	5th day	Panelist	1st	2nd	3rd	4th	5th day
1	F	F	F	F	F	20	C	C	C	F	G
2	F	F	F	F	F	21	C	C	G	G	G
3	G	G	G	G	C	22	F	C	C	F	F
4	G	G	G	G	G	23	C	C	C	C	C
5	C	C	G	G	G	24	C	C	C	C	F
6	F	F	F	F	F	25	C	C	F	F	C
7	C	G	C	G	G	26	F	F	F	F	F
8	G	G	G	G	G	27	F	F	F	F	F
9	F	F	F	F	F	28	F	F	F	F	F
10	F	C	G	G	C	29	F	F	F	F	F
11	F	F	F	F	F	30	F	F	F	F	F
12	C	G	G	G	G	31	C	F	F	F	F
13	G	G	G	G	G	32	G	G	G	G	G
14	C	C	C	C	C	33	F	F	C	G	F
15	F	F	F	F	F	34	F	G	F	C	G
16	C	F	F	F	F	35	C	C	C	C	C
17	F	F	F	F	F	36	F	F	F	F	F
18	C	C	F	C	C	37	F	F	F	F	F
19	F	F	F	F	F	38	C	F	F	F	F

Ratings:

Method A	Preference %
101 daily ratings for TCSA bar	53.3
43 daily ratings for comparison bar	22.5
46 daily ratings both equal	24.2
190 Total	

Method B	%
22 persons prefer TCSA bar	58.0
10 persons prefer comparison bar	26.3
6 persons rate both equal	15.7
38 Total	

demonstrate activity vs. *E. coli* on cotton and vs. *Staph. aureus* on nylon and wool.

More realistic, if more time consuming, is the viable cell count technique. A one inch square of fabric is inoculated with 0.1 ml. of a 24 hour *Staph. aureus* culture, incubated for a time; cells are then resuspended in sterile water. Serial dilutions of the suspension and subsequent development of colonies on agar plates yield a viable cell count. Bactericidal activity may be determined by resubculturing. By this technique, it is possible to demonstrate bacteriostatic activity vs. *Staph. aureus* for cotton containing 10 ppm TCSA. In a typical laboratory run using TCSA in a simulated laundry sour operation to produce a concentration of about 50 ppm TCSA on cotton, the following viable cell counts were obtained: (Table 7)

Time	no TCSA	ca 50 ppm TCSA
0.5 hr	1.0×10^8	0.85×10^8
4.0	2.6×10^7	2.0×10^5
24.0	9.0×10^6	3.7×10^2

Another method preferred to the agar plate method measures suppression of ammonia formation (5). Cotton inoculated with *Brevibacterium ammoniagenes* or *Proteus mirabilis* will convert urea to ammonia; ammonia production may be measured by acid titration. Figures 7 and 8 compare the effectiveness of TCSA and trichlorocarbanilide applied to cotton from an anionic detergent with and without hypochlorite bleach under simulated home laundering conditions. In Table 8, the ammonia suppression and agar plate techniques are compared in a study of TCSA, tributyl tin oxide and bithionol, all applied from a built anionic detergent, and di-isobutyl phenoxy ethoxyethyl dimethyl ammonium chloride (QAC) applied in the rinse.

Cotton treated with high levels of TCSA also shows some fungistatic activity. Cotton treated with 200 ppm TCSA will retain about 50% of its original tensile strength (compared with untreated fabric) after 10 days' soil burial. The same fabric will also show considerable inhibition of a mixed spore suspension of *Aspergillus niger, Stachybotrys atra* and *Penicillium expansum*.

TCSA possesses no affinity for hard surfaces (floor tiles, painted walls). The product, therefore, has limited utility in formulations requiring rinsing. In one labora-

(*Turn to Page* 109)

Figure 7. Ammonia suppression on fabrics laundered with built detergent containing indicated percentages of TCSA and trichlorocarbanilide, tested according to method of Majors (5). Horizontal figures are % bacteriostat in detergent; vertical figures ammonia production (ml. 0.01 NHCl).

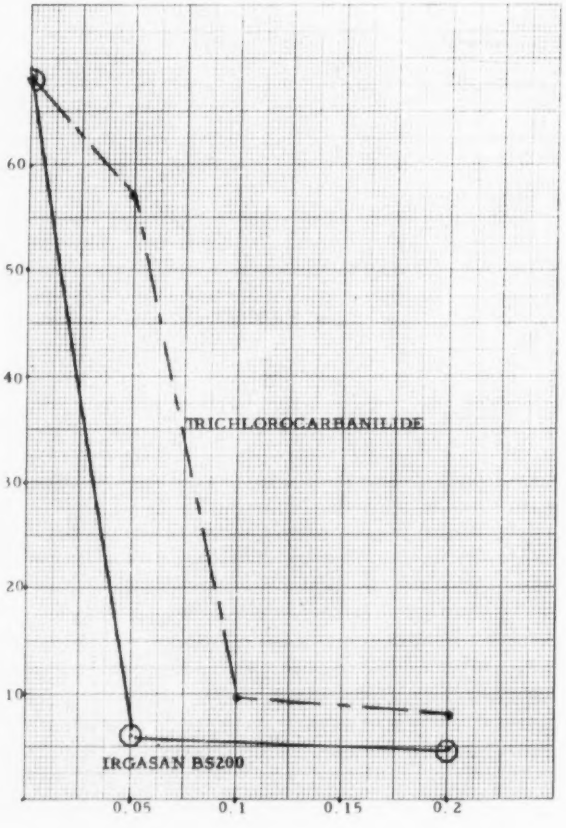
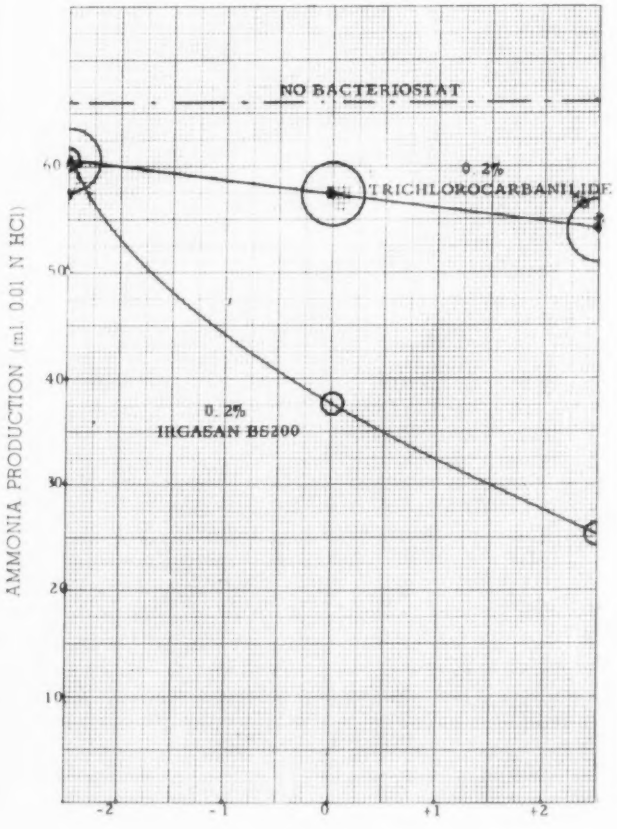


Figure 8. Ammonia suppression on fabrics laundered with built detergent containing TCSA and TCC in presence of 100 ppm active chlorine, tested according to method of Majors (5). Horizontal figures are addition of % 100 ppm hypochlorite prior (—) and after (+) addition of fabric to wash solution; vertical ammonia production (ml 0.01 NHCl).



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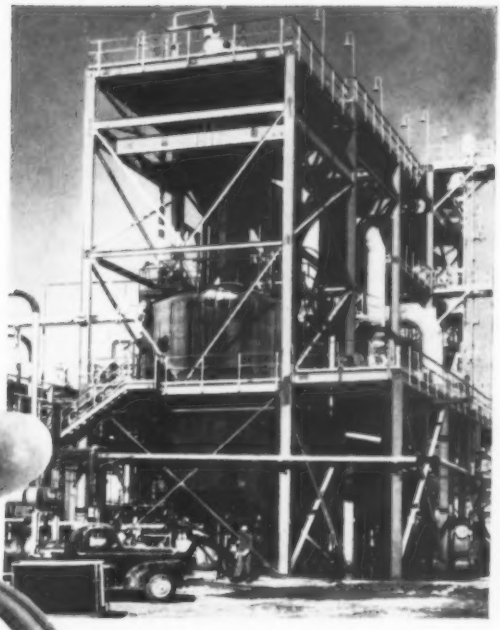

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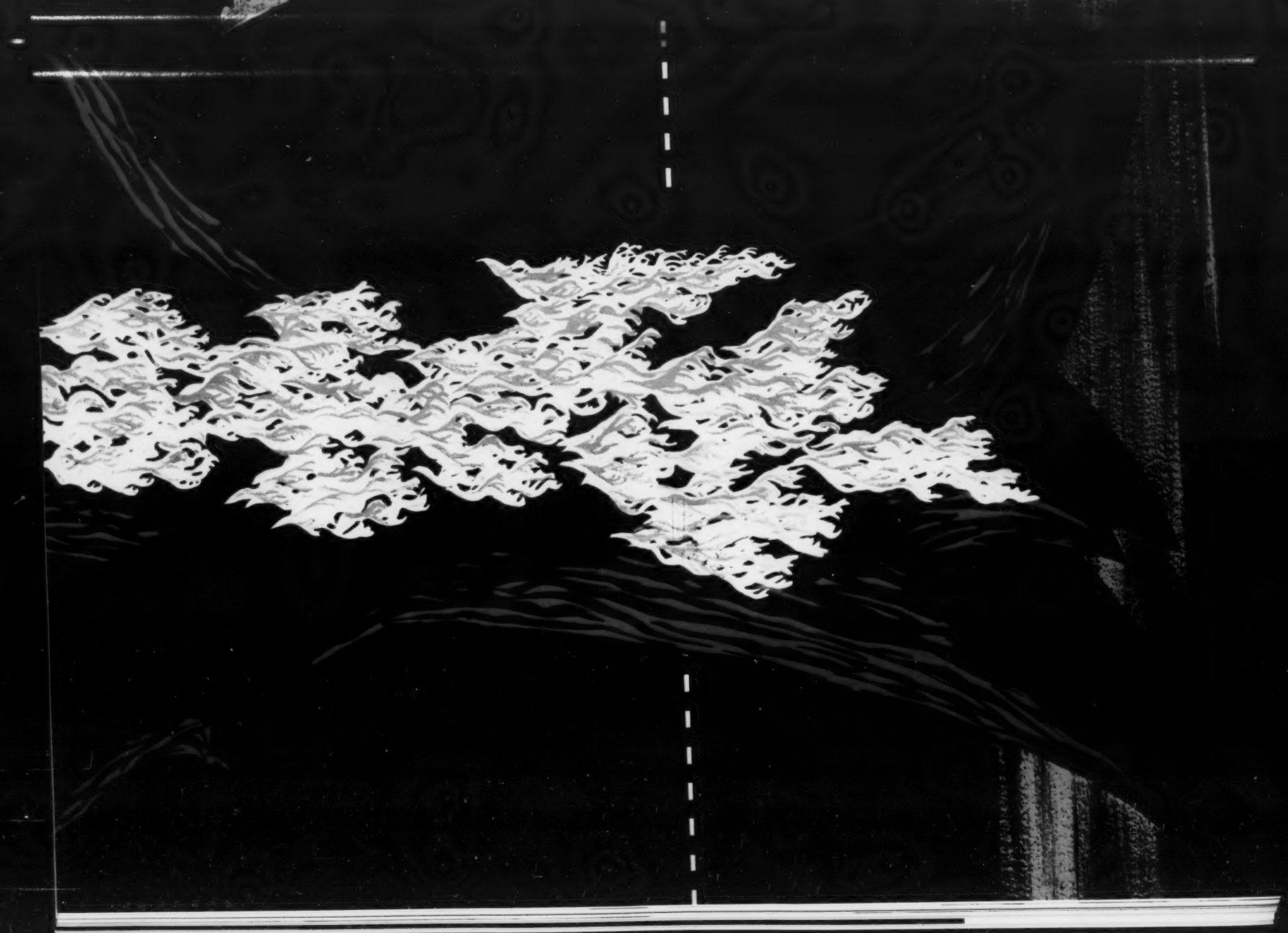

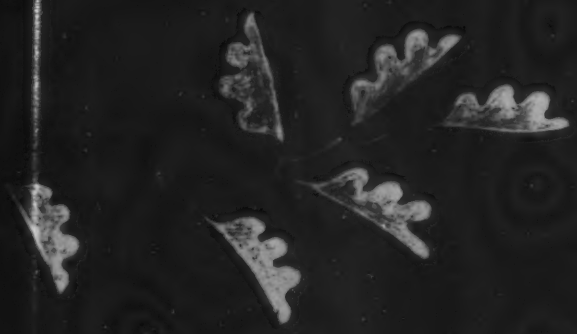

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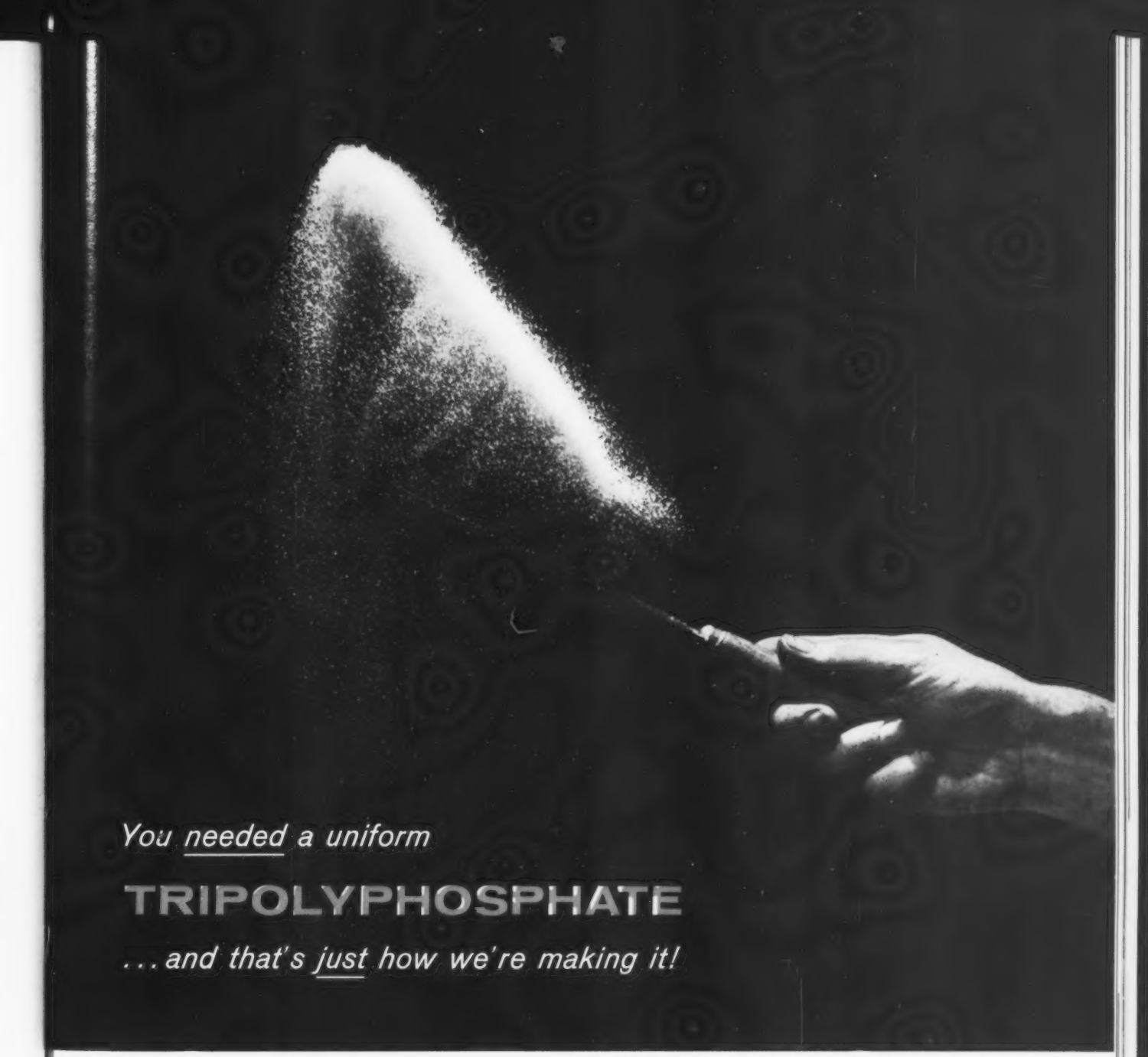

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John H. Adams, sales manager of the industrial division of Purex Corp., checks last minute details of introduction of new line of industrial floor maintenance products. Line, to be sold through sanitary supply distributors, was launched early in April. See p. 71.

Announcing . . .

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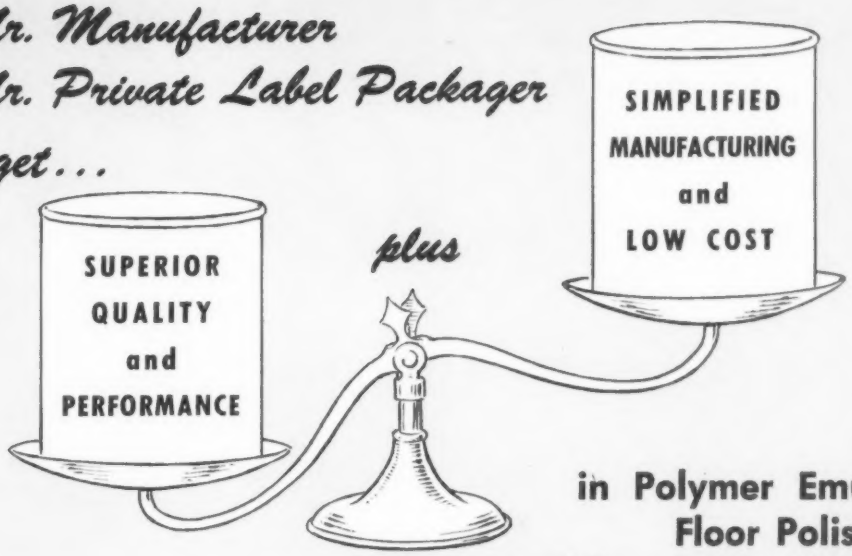

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John H. Adams, left, general sales manager, industrial division, Purex Corp., discusses new jobber line of floor maintenance products with Art Barraclough, center, assistant to general sales manager, and Ike Kershaw, division advertising manager.

Purex' "Lucky Seven"

A NEW name for a new line of industrial floor maintenance products began making its appearance throughout the U. S. early this month. The name? A nationally known one: Purex Corp., Ltd., South Gate, Calif. producer and marketer of detergents, soaps, cleanser, bleach and other chemical specialties. The line? Purex' "Lucky Seven" liquid maintenance products, which include: "Special Anti-Slip Floor Wax," "Spotlight Self-Polishing Floor Wax," "Big Boss Wax Remover," "Clearinse All-Purpose

The new Purex line of industrial floor maintenance products sold exclusively through jobbers is packaged in one gallon cans, five gallon pails, and 30 and 55 gallon drums.

Liquid Detergent," "Mop and Dustcloth Treatment," "Brytene Non-Slip Polymer Floor Polish," and "Premier 40% Coconut Oil Hand Soap."

In addition to the new liquid line, Purex will continue to market in bulk packages its line of powder products: "Trend 5," "Beads 'O Bleach," and "Institutional Dutch" cleanser. Purex has about 32 other products, some or all of which will be sold through the industrial division. Although Purex has maintained an industrial division for selling its cleansing and other chemical products in bulk, the new liquid line is giving this phase of Purex' operation a big shot in the arm.

Besides bringing about an increase in the number of individual salesmen working out of its 15 branch offices, the new "Lucky Seven" line has created exceptional enthusiasm among the men of the Purex industrial division who will have to get out and do the selling.

You can feel this enthusiasm —plus quiet confidence—when you talk with John H. Adams, general sales manager of the Purex industrial division, or his assistant, Art Barraclough.

The new Purex liquid line, which will be packaged in one, five, 30 and 55 gallon containers, will be distributed through three principal types of outlets: Sanitary supply jobbers, restaurant and bar supply houses and institutional wholesale grocers, who deal exclusively with institutions.

The new Purex liquid line will be introduced with a publication and direct mail advertising campaign, the theme of which will be "Clean up with Purex' Lucky Seven." Because of the close association of dice with the word "seven," the "ivories" are being featured prominently in advertising and promotion in behalf of the new line. In fact, the second mailing piece consisted of a box resembling two dice, from which a letter pops out.

Taking a leaf from its success in the field of household consumer products, Purex has spared no effort in designing industrial packages with strong sales appeal for the new industrial liquid line. Design for each of the four industrial package sizes bears a strong "family resemblance" to the containers for all other items in the line. The basic design, lithographed on the containers, consists of bands of metallic gold and blue, plus the familiar red Purex trade mark. The color bands have been worked out around the tops and bottoms of the one and five gallon containers to form large white octagonal areas, which reiterate the octagonal shape of the Purex trade mark. The firm's trade mark appears at the top of the large white octagonal area on the front of the one gallon cans and on the face of the five gallon containers. The 30 and 55-gallon drums carry one large octagon, with a border of metallic blue and gold bands. Again, the smaller Purex octagonal trade mark appears at the top of the larger octagon. The name and description, as well as instructions for use, of the individual product are silk screened on the white octagonal areas which are repeated around the package. The design was developed by Cawley-Neff Associates, Inc., Philadelphia.

The one gallon cans are supplied by Crown Cork & Seal Co., Philadelphia, and the five gallon cans by Rheem Manufacturing Co., Linden, N. J.

Sales and distribution of the Purex industrial line, including liquids and powders, are being handled out of 15 branch offices. They are: Atlanta, Boston, Chicago, Cleveland, Cincinnati, Detroit, Houston, Los Angeles, Kansas City, Mo., Milwaukee, Minneapolis, New York, Omaha, Orlando, Fla., and Philadelphia. Of these, the following are new: Kansas City, Houston, Cincinnati, Boston, Orlando, Milwaukee, Atlanta. Later, it is expected, additional warehousing and shipping points will be added.

The seven new liquid products being offered by Purex are described as follows: "'Spotlight Self-Polishing Floor Wax' . . . a balanced emulsion with self-healing qualities that assures a smooth even film without streaks. Its exceptional water resistance offers a film that may be damp mopped immediately after drying—yet removability is easy and complete when required.

"'Special Anti-Slip Wax' . . . formulated to stress added safety, plus other factors necessary in a quality wax emulsion for it protects the floor as well as those walking on it. Highly recommended for areas where other waxes have been a problem.

"'Brytene Non Slip Floor

(*Turn to Page* 109)

Watching new line of Purex industrial floor maintenance products come off filling line are, l. to r.: Art Barraclough, assistant to general sales manager; Ike Kershaw, advertising manager, and John H. Adams, general sales manager of the industrial products division of Purex Corp., Ltd.

Disinfectants for Bedding

By Milton J. Foter, Ph. D.*†
Robert A. Taft Sanitary Engineering Center
U. S. Public Health Service
Cincinnati

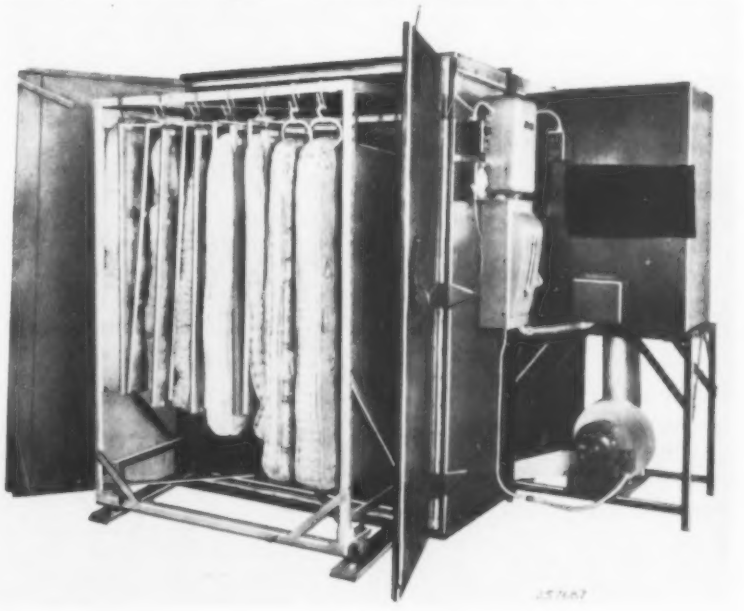
CURRENT studies of hospital infections in the United States, Canada, and Great Britain have emphasized the desirability of disinfecting mattresses, bed linens, blankets, and clothing following use by infected patients. There is need also to outline practices for the decontamination of these items in homes where infections have occurred, especially in view of the difficulties involved in disinfection by the untrained.

Home and hospital bedding and bedding materials are potential reservoirs of bacteria, many of which are pathogenic. In a one-year study of commercially laundered white and colored clothes, Arnold (1) found that the initial flush waters showed average bacterial populations of approximately 200,000 and 3,600,000 per ml., respectively. Roundtree and Armytage (2) reported that blankets carried a heavy bacterial load, and that hemolytic streptococci were removed from the blankets in large numbers. Hamburger, *et al.*, (3) recovered hemolytic streptococci in significant numbers from bed linen. Church and Loosli, (4) reporting on the numbers and kinds of organisms in soiled bedding stated that bacterial counts ranged from 64,500 to 1,860,000 per square foot of the textile; while in laundered bedding the counts ranged from 1,300 to 326,000 per square foot of textile. The bacterial count on ironed bedding was greatly reduced. The most commonly isolated were staphylococci and alpha and non-hemolytic streptococci. Many of the strains of *Staph. aureus* were beta hemolytic and coagulase positive. Blowers (5) reported that hospital bedding has a high bacterial population and that many of the organisms are pathogenic staphylococci and streptococci. Perry, *et al.*, (6) reported that blankets contained large numbers of Group A streptococci deposited by nasal carriers. No evidence was obtained that the Group A streptococci on the blankets issued to military personnel caused respiratory infections.

Conant, *et al.*, (7) and Swaebly and Christensen (8) studied the mold population of mattresses, pillows, and various types of furniture stuffing and reported that these materials contained large numbers of fungi. Cooke and Foter (9) studied the fungi in used bedding. Among the many mold isolates which were identified, a number of species have been implicated in allergies and one species as a potential pathogen.

After an extensive review of the literature relative to the role of clothing in the transmission of disease and extensive bacteriological studies of automatic clothes washing methods, Ridenour (10) reported that information concerning transmission of disease by clothing is meager. Soiled clothing and other articles were found to contain from a few to millions of microorganisms with potential

Figure 1. Electrically heated disinfecting chamber (300 cubic feet).



*Paper presented during 46th annual meeting, Chemical Specialties Manufacturers Assn., Washington, D. C., Dec. 8, 1959.

† The contents of this paper are derived from the available literature and the opinions of the author, and should not be construed to represent the views of the Public Health Service.

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pathogens being present.

Other investigators (11) have been concerned with the persistence of *M. tuberculosis* and viral agents on bedding and bedding materials and their transmission to patients and laundry workers.

Although contaminated bedding has been incriminated, from time to time, in the transmission of disease, its public health significance has not been assessed adequately. However, the following statement of Barnes, (12) in his article entitled "A Public Health Role for the Laundry," is pertinent.

"Among the cardinal principles of preventive medicine, as applied to the control exercised over cases of diseases transmissable from person to person via bodily discharges, is that of concurrent disinfection. Through this means an attempt is made to destroy infective material as completely as possible at its source, never permitting it to get beyond our control. As applied to washable articles from isolation hospitals and homes, this has been interpreted to mean that all contamination therein must be destroyed by appropriate measures . . . "

Commercial Sterilization

Dry heat or dry heat and formaldehyde: In 42 states and the District of Columbia, there are laws requiring sterilization of used bedding, bedding materials, and upholstered furniture before resale. Regulations implementing these laws prescribe methods utilizing dry heat or dry heat and formaldehyde. Other methods include the use of mixtures of ethylene oxide with carbon dioxide or halogenated hydrocarbons (13) and methyl bromide. (14)

Lloyd and Foter (15) studied the efficiency of dry heat and formaldehyde in sterilizing used bedding. The major part of the study was conducted in the field in commercial nonpressure, mattress-sterilizing chambers of approximately 300 cubic foot capacity. (Illustrated in Figures 1, 2, and 3.) Air

Figure 2. Non-pressure gaseous disinfecting chamber (300 cubic feet).

temperatures at several positions within the chambers were registered by recording thermometers. Surface and inside temperatures of the bedding were measured by thermocouples. *E. coli, Staph. aureus, M. phlei,* and spores of *B. globigii* and *A. niger* were used as test organisms for bedding contamination. Filter paper strips were inoculated with known numbers of cell or spore suspensions, dried at room temperature, and the strips transferred to sterile envelopes made from bedding ticking.

To determine the efficiency of dry heat or dry heat and formaldehyde, untreated, used cotton-felt and inner-spring mattresses were placed horizontally on or suspended vertically from the mattress rack. Thermocouples and envelopes containing test-culture strips were placed inside and on the mattress surfaces. The rack was then transferred to an electrically heated chamber, equipped with an air-circulating fan. Formaldehyde, when used, was generated by heating a 37 per cent solution of for-

Table 1. Efficiency of Dry Heat in Sterilizing Contaminated Mattresses

Test Temperature and Exposure Time	Chamber Location of Culture	Staph. aureus	Myco. phlei	B. globigii	A. niger
230°F—2 hrs.	Top front	0	0	0	0
	Top back	0	0	0	0
	Bottom back	0	0	+	0
	Middle center	0	0	+	0
	Inside innerspring mattress	0	0	+	0
	Inside cotton-felt mattress	+	+	+	+
250°F—2 hrs.	Top front	0	0	+	0
	Top back	0	0	+	0
	Bottom back	0	0	+	0
	Middle center	0	0	+	0
	Inside innerspring mattress	0	0	+	0
	Inside cotton-felt mattress	0	0	+	0
270°F—1 hr.	Top front	0	0	0	0
	Top back	0	0	0	0
	Bottom back	0	0	0	0
	Middle center	0	0	+	0
	Inside innerspring mattress	0	0	+	0
	Inside cotton-felt mattress	0	0	+	0

0 = No growth after subculturing and incubation for at least 1 week.
+ = Growth after subculturing and incubation for at least 1 week.

Figure 3. Non-pressure gaseous disinfecting chamber (300 cubic feet).

maldehyde in a shallow dish on the chamber floor. Tests were made at temperatures ranging from 230°F to 250°F for 1¼ to 2¼ hours and on formaldehyde quantities ranging from one pint to one quart per 1,000 cubic feet.

To ascertain formaldehyde concentrations during the exposure periods, air samples were collected at a rate of eight liters per minute for 10 minutes and were analyzed for formaldehyde by the sulfoxylate method.

Laboratory tests were made to determine the physical effects on foam rubber of steam under pressure (248°F at 15 pounds per square inch), dry heat (230°F), and heat and formaldehyde in a humid atmosphere. Cored and uncored foam rubber samples, wrapped in mattress ticking, were used. Unwrapped samples were also used for comparative purposes. Culture strips containing the test organisms were inserted in the samples to determine the bactericidal efficiency of formaldehyde and heat under moist conditions. Air samples were collected and analyzed for formaldehyde by the method previously indicated.

Results of these investigations, shown in Table 1 and 2, may be summarized as follows:

1. Except for the organisms inside cotton-felt mattresses, dry heat at 230°F for two hours in a commercial sterilizing chamber killed all nonsporulating test cultures. Spores of *B. globigii* survived all temperatures and exposure periods.

2. Considerable temperature variations were found in the bedding and in the chambers when the chambers were heated to the desired test temperatures.

Table 2. Efficiency of Heat and Formaldehyde in Sterilizing Contaminated Mattresses

Formalin	Test Temperature and Exposure Time	Chamber Location of Culture	Survival Following Exposure			
			Staph. aureus	Myco. phlei	B. globigii	A. niger
1 pint per 1,000 cu. ft. 6 oz. per 300 cu. ft.	230°F—2¼ hrs.	Top front	0	0	+	0
		Middle center	0	0	+	0
		Middle front	0	0	+	0
		Bottom back	0	0	+	0
		Inside innerspring mattress	0	0	+	0
		Inside innerspring mattress	0	0	+	+
1 quart per 1,000 cu. ft. 10 oz. per 300 cu. ft.	230°F—2¼ hrs.	Top front	0	0	+	0
		Middle center	0	0	+	0
		Middle front	0	0	+	0
		Bottom back	0	0	+	0
		Inside innerspring mattress	0	0	+	0
		Inside innerspring mattress	+	+	+	0
1 pint per 1,000 cu. ft. 6 oz. per 300 cu. ft.	250°F—1¼ hrs.	Top front	0	0	+	0
		Middle center	0	0	+	0
		Middle front	0	0	+	0
		Bottom back	+	0	+	0
		Inside innerspring mattress	+	0	+	0
		Inside innerspring mattress	+	0	+	0
1 quart per 1,000 cu. ft. 10 oz. per 300 cu. ft.	250°F—1¼ hrs.	Top front	0	0	+	0
		Middle center	0	0	+	0
		Middle front	0	0	+	0
		Bottom back	0	0	+	0
		Inside innerspring mattress	0	0	+	0
		Inside innerspring mattress	+	+	+	0

0 = No growth after subculturing and incubation for at least 1 week.
+ = Growth after subculturing and incubation for at least 1 week.

3. The addition of formaldehyde in quantities of one pint to one quart per 1,000 cubic feet of chamber space did not enhance the sterilizing effects of dry heat alone.

4. Marked physical effects were noted in foam rubber when subjected to dry heat at 230°F and steam under pressure (248°F at 15 pounds per square inch). No adverse effects were observed when foam rubber was subjected to heat at 122° to 158°F and formaldehyde in a moist atmosphere. No viable organisms were recovered from artificially contaminated foam rubber exposed to an average of 376 mg. formaldehyde per cubic foot for six hours at 149° to 158°F and an indicated average of 60 to 65 per cent moisture.

5. These methods, generally prescribed in state bedding laws for the treatment of used bedding and bedding materials, are inefficient and inadequate for actual sterilization.

Formaldehyde is not considered a true gaseous sterilant or disinfectant. Solid paraformaldehyde or liquid Formalin (37 per cent formaldehyde in five to 15 per cent methyl alcohol in water) both release formaldehyde slowly at room temperature and more rapidly as the temperature increases. Concentrations of formaldehyde in air in excess of either 1.75 mg. per liter or three mm. of Hg pressure are unstable and condense out on surfaces as paraformaldehyde. To achieve maximum formaldehyde efficiency, the temperature must be well above 21°C. (70°F) and the relative humidity near saturation. At low relative humidities, formaldehyde condenses on surfaces as paraformaldehyde and at high humidities surfaces are being treated in effect with a thin layer of liquid Formalin. The applications of formaldehyde and its advantages and disadvantages are discussed more thoroughly by Phillips. (16)

Gaseous Disinfection

A variety of chemicals have been suggested as gaseous sterilants,, i.e., chlorine gas, triethylene and propylene glycols, sulfur dioxide, hydrocyanic acid, methyl bromide, formaldehyde, ethylene oxide alone or in combination with other gaseous diluents, beta propiolactone, and others. Many of these fail in one or more respects to meet such requirements as being antibacterial at normal atmospheric conditions, noncorrosive, penetrative, nontoxic, noninflammable, nonexplosive and nondeleterious. In addition such a material should be freely available, and moderate in price.

In the search for a more effective gaseous decontaminant or sterilant for the military, ethylene oxide was rediscovered in 1949 by Phillips and his associates (17). Ethylene oxide exhibits a toxic effect as a vesicant, causing large blisters if its vapors are in contact with the skin for a prolonged period. If the compound is confined by clothing, rubber and leather goods, blisters will appear on the skin. When materials to be used in intimate contact with the body are sterilized by ethylene oxide, they should be aired for a day before use. Ethylene oxide is also extremely flammable and explosive. When it is combined with inert gaseous diluents, such as carbon dioxide and halogenated hydrocarbons in the mixtures available for this use, this hazard is eliminated, and these gaseous diluents appear to have no effect on the bactericidal activity. Kaye and Phillips (18) have shown that articles contaminated with spores of *B. globigii* were sterilized more readily, with this gaseous mixture in air at 28% relative humidity, than at 97%. Ethylene oxide is a slow-acting gaseous sterilant, but sporicidal as indicated by Table 3. (13)

Several manufacturers are making available pressure-vacuum equipment for the sterilization of bedding, bedding materials, clothing by ethylene oxide in combination with inert gaseous diluents. Data reported by one manufacturer (19) indicate that, with spore populations of *Bacillus globigii*, *Bacillus stearothermophilus*, and *Clostridium sporogenes* on test strips in the range of 100,000 to 1,000,000, sterilization was obtained in four hours when using 500 mg. of ethylene oxide per liter and in two hours with 1,000 mg. per liter (130°-135°F and 30-50 per cent RH).

Another chemical which is being developed as a gaseous sterilant for bedding and bedding materials, is beta-propiolactone. (20, 21) Since this chemical is active at low concentrations, it is easy to obtain bactericidal concentrations of its vapor in air. Like formaldehyde and unlike ethylene oxide, it requires a high relative humidity, 70 per cent or above, to be rapidly bactericidal. It does not appear to be as effective as ethylene oxide in penetrating porous materials. Its advantages over formaldehyde and ethylene oxide are (a) more rapid

(*Turn to Page* 103)

Table 3. Time Required for the Sterilization of Spores of B. globigii on Cotton Cloth With Ethylene Oxide*

Conc. of Gas mg./liter oz./1000 cu. ft.	Per Cent Reduction in Hrs. Exposure					
	2	4	6	8	10	24
			At 37°C.			
22	<99	99	<99	100	100	100
44	99	>99	100	100	100	100
88	>99	>99	100	100	100	100
			At 25°C.			
22	<99	<99	<99	<99	<99	<99
44	<99	<99	99	99	>99	100
88	99	99	>99	>99	100	100

*From the data of Phillips, C. R. The sterilizing action of gaseous ethylene oxide. I. Sterilization of contaminated objects with ethylene oxide and related compounds. *American Journal of Hygiene*, *50*, 280, 1949.

Bacteria Control in Floor Polishes

By Richard H. Cahill and Lloyd H. Perry*,
U B S Chemical Co.
A division of A. E. Staley Mfg. Co.
Cambridge, Mass.

DURING the early days of latex paint production, a puzzling problem was encountered by one manufacturer. From the field it was reported that several cans were developing pressure even to the point of bursting at the seams. No change was apparent in the paint itself; the pressure seemingly was caused by a hydro-carbon type gas.

Under completely different conditions, a user of natural latex experienced stability problems in his bulk storage tanks, especially during summer. The latex developed a very strong odor and a change in color was noted. These changes were frequently accompanied by a drop in the viscosity of the latex.

Most people would suspect bacteria as the cause of the trouble in the storage tank. On the other hand, how many would blame bacteria for the latex paint trouble? There was no foul odor. The material looked normal. In fact, in the case of the paint, in which the polymer was butadiene-styrene, considerable time was spent to prove that the polymer had depolymerized and that butadiene caused the problem. Actually, bacteria were the offenders in the paint, just as much as the natural latex. From this it certainly should not be inferred that bacteria are the root of all stability problems. This is far from the truth! At the same time, bacteria account for more problems than is generally realized. The primary reason for the presentation of this paper is to provide a better basis for recognizing and correcting bacterial problems.

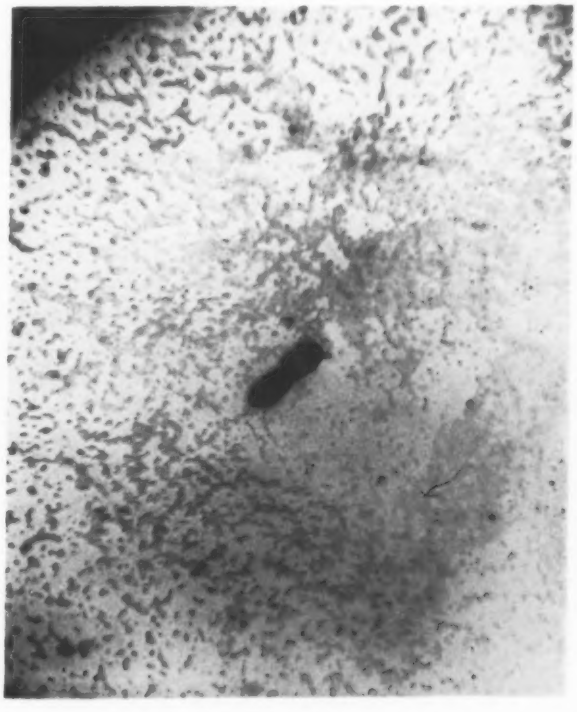
* Paper presented during 46th annual meeting, Chemical Specialties Manufacturers Assn., Washington, D. C., Dec. 9, 1959.

Bacteria

Bacteria are microscopic, one-celled plants, capable of multiplying rapidly. Many types have been identified, some of which are completely harmless and may even be beneficial. Our prime concern,

Figure 1

Figure 2



however, is the so-called spoilage type. These are the types that caused trouble in both the cases of the paint and in the natural latex cited earlier. One of the greatest difficulties in coping with bacteria is that they are prevalent everywhere except in the areas that have been sterilized. Once a single bacterial cell has been introduced, however, there is then an immediate chance for growth, providing conditions are right. In most cases moisture is necessary for bacterial growth; about 10% water is the minimum concentration. The most favorable temperatures for growth are 65°F. to 95°F., which coincide with normal temperature conditions. In addition to proper environment, bacteria require nutrients. Practically any material can serve as a nutrient for one or more of the various types of bacteria. Under favorable conditions, bacteria cells reproduce and divide into two cells in about 30 minutes. This doesn't sound very fast, but a quick calculation shows that in less than nine hours, a single bacteria cell can increase to over 100,000.

Bacteria cells have been occasionally observed in examining floor polish emulsions with an electron microscope. (See Figure 1). The most common are somewhat larger than the polymer particles and are rod or sausage shaped. We believe this particular species is Pseudomonas. In Figure 2, you will note that a cell which has started constricting in the center. This is the first step in the division of a cell.

It should be recognized that bacteria themselves do not cause the troubles. Bacteria form enzymes which pass through cell walls and chemically attack other ingredients in the mixture, solubilizing them and converting them into digestible nutrients. These breakdown products cause discoloration and formation of odor, gas, slime, etc., some of which were evident in the examples cited earlier. An example of the effect of the breakdown of bacteria on a polymer emulsion is shown in Figure 3. These are felt to be the carcases of dead bacteria cells. In the paint, the enzymes formed a gas, and depolymerization did not occur as suspected. In the second example, the enzymes again caused the formation of some gas, this time very malodorous. The formation of gas was also accompanied by a discoloration of the latex.

Summarizing the discussion thus far, we have seen that bacteria are prevalent everywhere. Further, normal manufacturing and storage conditions favor bacterial growth. This being the case, what can be done to eliminate bacterial problems in floor polishes?

Bacteria Control Methods

A sensible start toward control of bacteria in floor polish emulsions is strict enforcement of good housekeeping practices within the plant. The reasoning here is straight-forward. Manufacturing equipment, storage facilities and packaging machinery must be clean to prevent introduction of numerous growing bacteria colonies which thrive on residues, stagnant pools and wall scale, all of which typify unsanitary operations. A material that has been kept relatively free from bacteria during manufacture is much simpler to protect than one that has been contaminated.

Periodic cleaning of storage and processing vessels with heavy duty detergents, hot water, steam or hypochlorite is recommended. The use of an effective follow-up sanitizing solution is also desirable. This can be made as follows:

*Phenylmercuric acetate solution	5 lbs.
Caustic soda	20 lbs.
Water	1000 gallons

A typical procedure is to circulate this solution at a temperature of 150°F. through tanks, pipes, pumps, etc. for one half hour. It is also good practice to immerse small measuring vessels, hose-line connections and stirrers in this same solution when they are not being used.

Sterilization of equipment by heat is expensive and gives only temporary relief since fresh product may reintroduce bacteria to the system. This technique is difficult to use correctly and should only be undertaken upon the advice and direction of a competent authority.

Unfortunately, ambient temperature conditions closely proximate the optimum temperature for the growth of many spoilage-type bacteria. The potential for bacterial reproduction is greatly reduced below 60°F. Thus, cool storage conditions should be sought, whenever practical. In any event, storage of product near steam pipes or in hot warehouses is undesirable.

Bacteria thrive best at a neutral pH, all other conditions being equal. Most floor polishes are alkaline, varying from 7.5-10.0 in pH. It has been shown that higher pH's (9.0 or above) are less favorable for bacterial growth, although control of pH alone will not prevent bacterial growth.

Assuming equipment is clean, the most likely source for introducing bacteria into floor polish systems comes from raw materials. Because floor polish contains upward of 80% water, good process water, free of bacteria is highly desirable. Polymer dispersions are normally protected by the supplier with a preservative when necessary.

(*Turn to Page* 113)

Figure 3

* Butrol, Buckman Laboratories, Memphis, Tenn.
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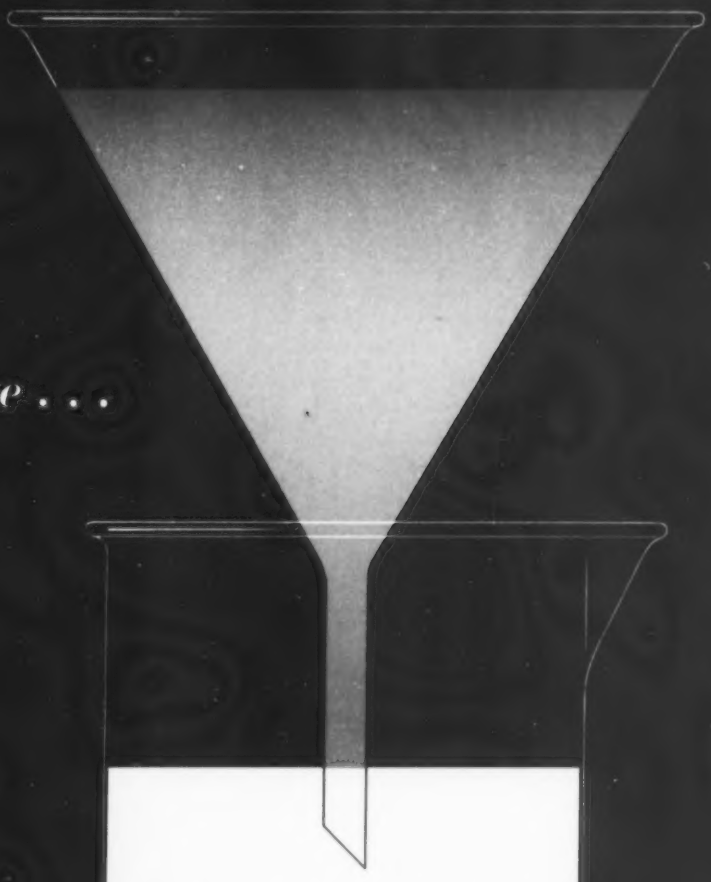

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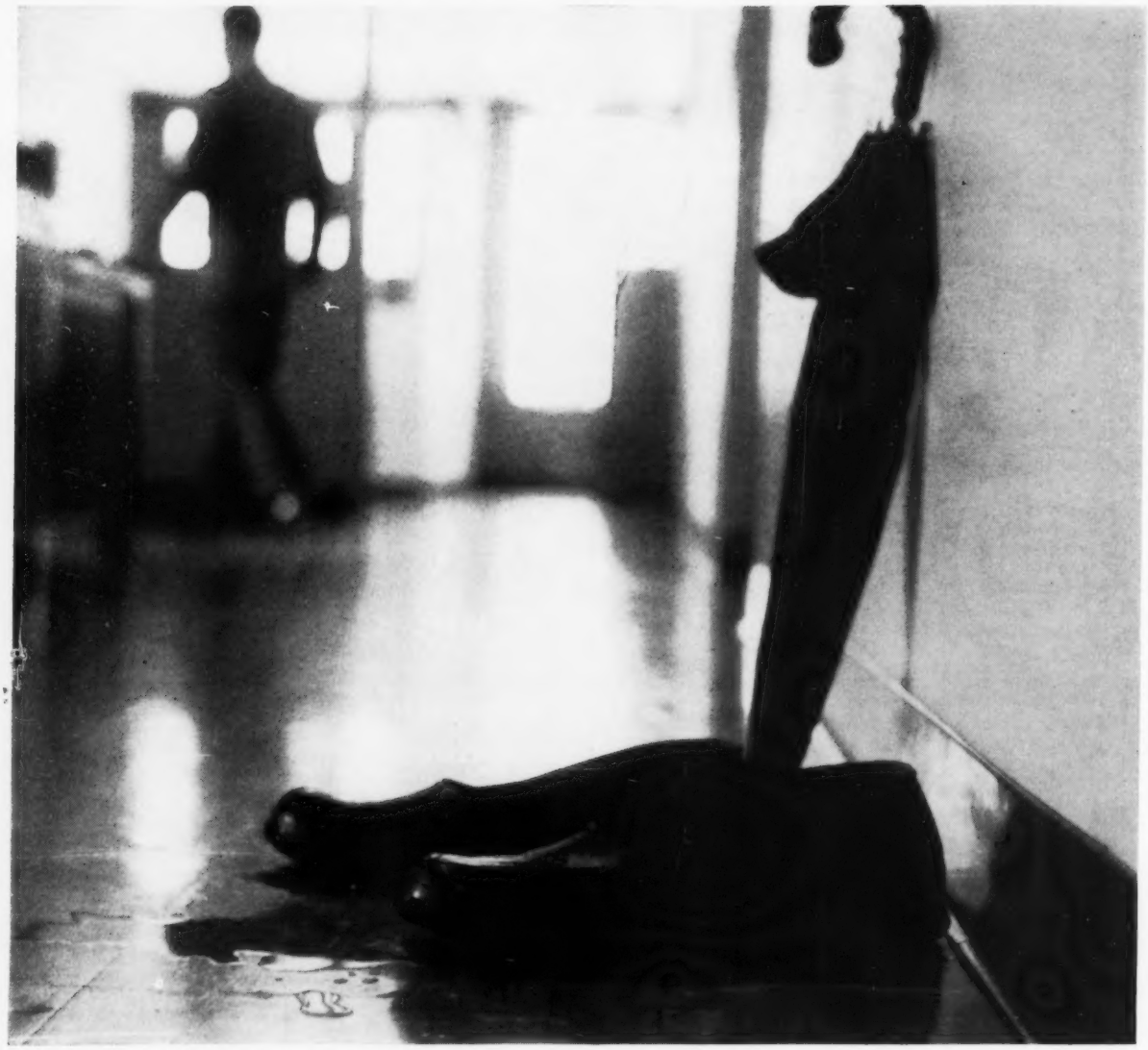

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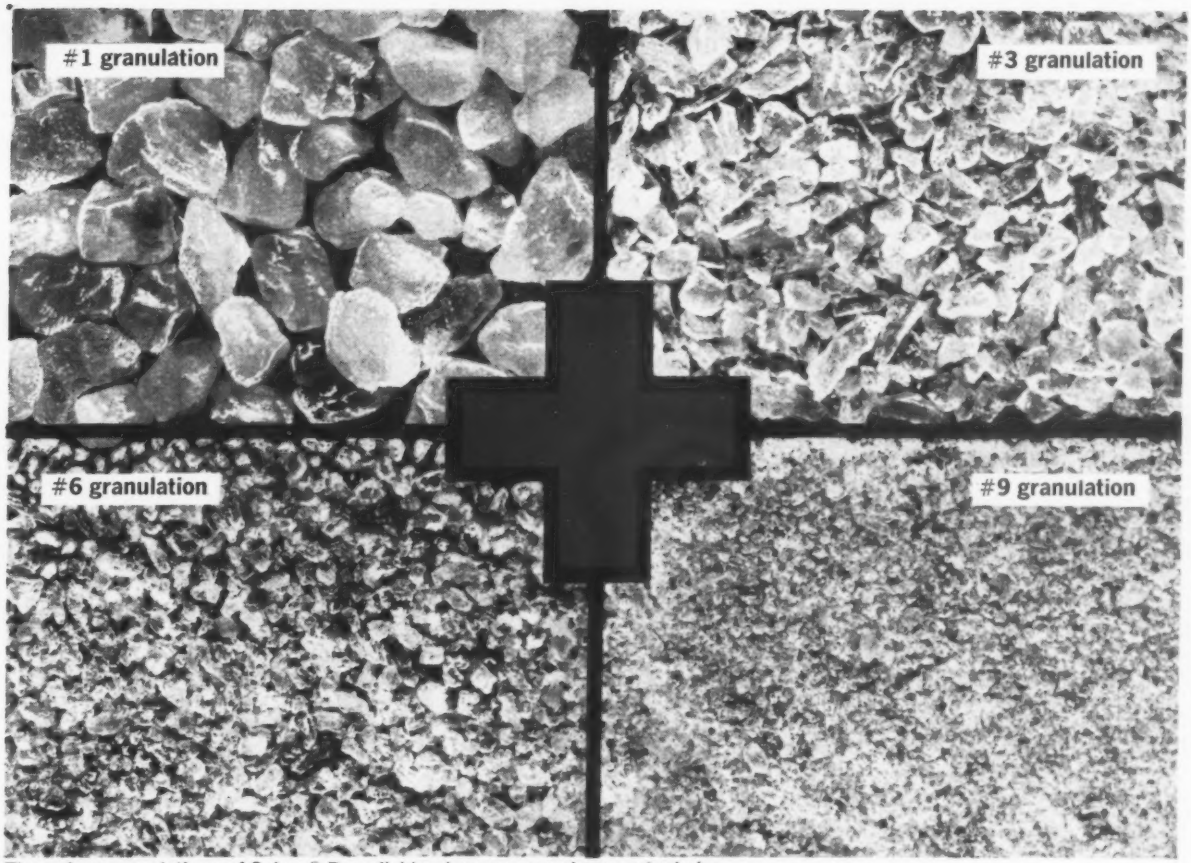

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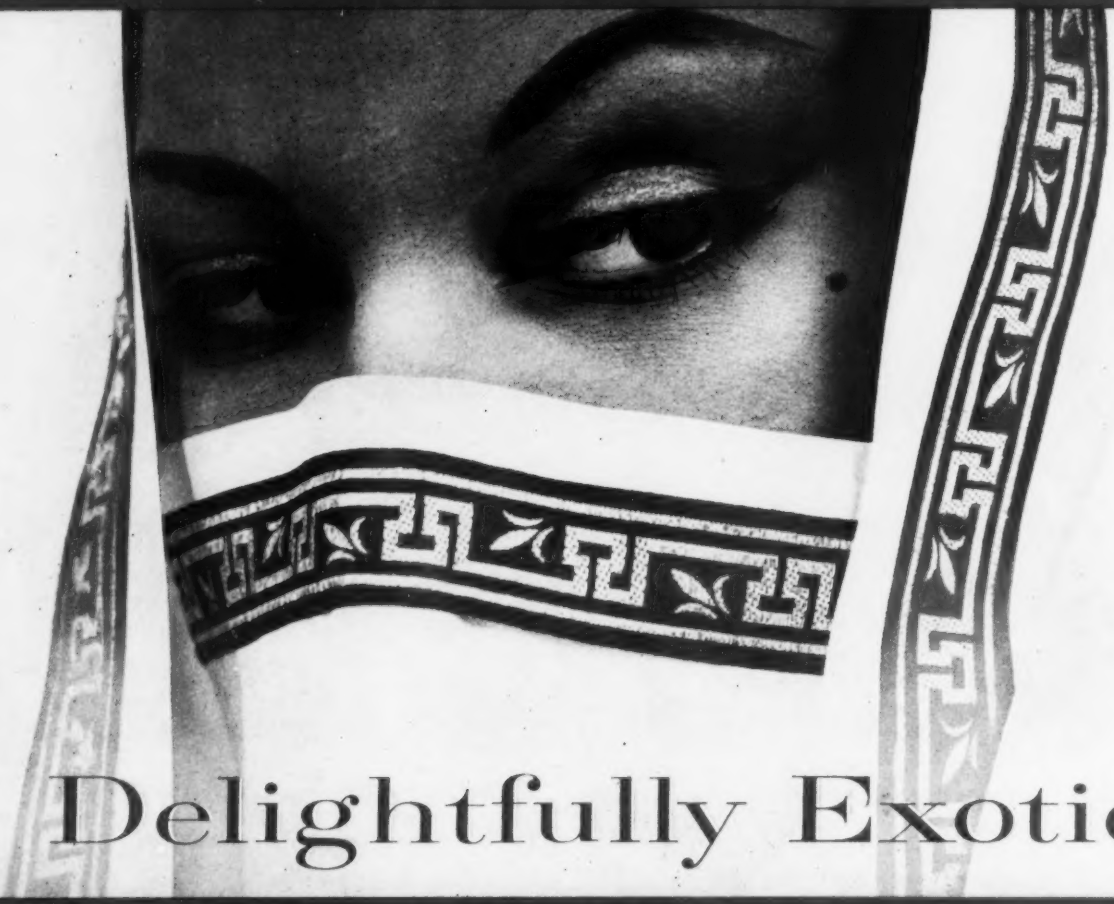

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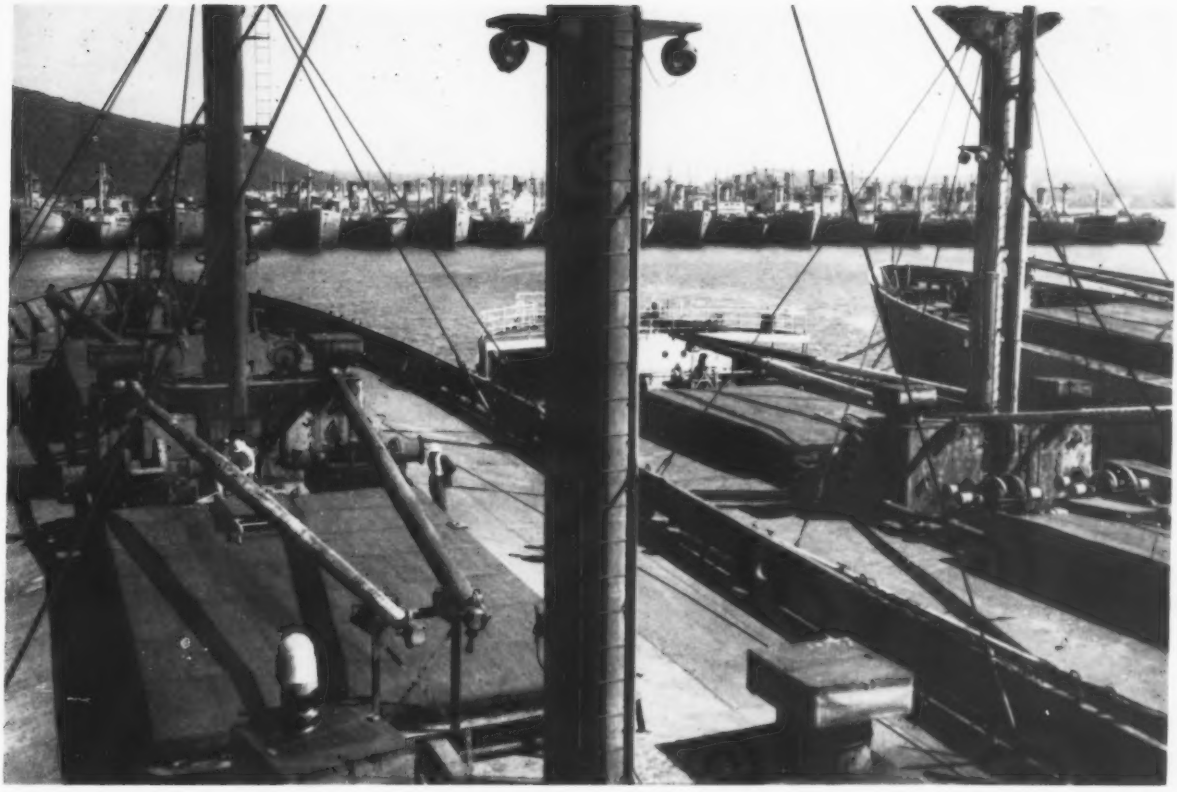

Sixty World War II Liberty Ships anchored in the Hudson River at Tompkins Cove, N. Y., comprise one of the U. S. government's "floating grain warehouses." One of four such grain storage operations throughout the U. S., the Hudson River Reserve Fleet stores 15-million bushels of wheat. Ships are sprayed four times during summer months with pesticide.

Insecticides for Stored Grain

To protect the 15 million bushels of wheat it has stored in one "floating grain warehouse", the U.S. needs over 5,000 gallons of pyrethrins-piperonyl butoxide spray.

FIFTEEN million bushels of wheat, in government storage up to six years, are protected against insect invasion by a pyrethrins and piperonyl butoxide water emulsion spray. The grain is stored in a "moth ball" fleet of sixty Liberty ships anchored in the Hudson River from Stony Point to Tomkins Cove, about 50 miles from New York City. The ships are maintained by the U. S. Maritime Administration, while the grain storage operations are the responsibility of the Commodity Stabilization Service of the U. S. Department of Agriculture. Specified for this use by USDA, the pyrethrins and piperonyl butoxide spray is supplied by Fairfield Chemicals, Division of Food Machinery and Chemical Corp., New

Standing ankle deep in 20 feet of wheat, worker uses trident-shaped applicator for spraying pyrethrins and piperonyl butoxide solution in 60 grain storage ships. Spray is applied to bulkheads and structural members in air space of each hold.

York. Let out on contract, spraying has been conducted for the past three years by the Industrial Fumigation Co., New York.

Loaded at grain elevators in New York City, the ships are towed up the Hudson. The vessels are fitted with a special ventilating system, which keeps humidity and temperature at a sufficiently low level to protect the grain against spoilage and insect infestations. The system of fans is operated only on dry days during five or six cold winter months. Wheat chilled in this manner retains its lowered temperature even in 80 to 90 degree weather.

USDA specifications call for four spraying operations at 30 day intervals beginning May 15 and continuing through the summer. Initial spraying is done with an 0.4 per cent solution of pyrethrins and 4.0 per cent piperonyl butoxide mixed with water. Follow up sprays are aqueous solutions of 0.3 per cent pyrethrins and 3.0 per cent piperonyl butoxide. The insecticidal solution is applied at the rate of two quarts per 1,000 square feet of surface.

Grain Fleet Supervisor David J. Ryan, veteran U. S. Department of Agriculture grain storage specialist, pours test sample of wheat taken from hold or grain storage ship into Tag Heppenstall moisture meter. Wheat samples are tested regularly to check temperature and moisture content of grain. Test thermometers line shelf above moisture meter. Fleet offices are located aboard converted World War II supply ship anchored off Tompkins Cove, N. Y.

Powered by a gasoline motor linked to portable mixing tanks on deck, spray is applied through a trident shaped applicator which delivers three fine jets of insecticide solution. Only bulkheads, beams, and structural members are sprayed in the air space of each hold above the grain. The wheat itself is not sprayed but receives fall out during spraying. Two spray teams, each consisting of three men and a USDA inspector, process an average of three ships a day. According to B. Oppenheim of Industrial Fumigation this procedure affords effective control of insects which may enter the holds. Fall out from the air borne spray suffices to protect the susceptible top level of the grain. The spray is non-toxic, does not affect grade, appearance, taste, odor, baking characteristics, or chemical compo-

Spraying completed, spray team, led by U. S. Department of Agriculture inspector Walter Gorton, climbs ladder to leave hold of a "moth-balled" Liberty Ship used for storing wheat. Two teams spray wheat with pyrethrins and piperonyl butoxide insecticide solution. They average about three ships per day. Spraying is done at 30 day intervals during the summer months when grain is most susceptible to insect invasion.

Pest control experts slide back hatch to open hold of "moth-balled" World War II Liberty Ship. They will enter hold to spray surplus government grain with pyrethrins-piperonyl butoxide mixed with water. In background (center) is specially constructed, weatherproof vent through which fans draw in cold, dry air during winter months. Elaborate fan system is credited with maintaining excellent condition of wheat often stored for as long as five to six years.

sition of the treated wheat, according to Fairfield.

Tests show that the grain's moisture level is not affected by carefully controlled use of aqueous sprays. The water is said to evaporate fast leaving an effective residue of insecticides.

Responsibility of maintaining the stored grain in desirable condition rests upon David J. Ryan, USDA grain storage specialist. Engaged in this field since 1913, Mr. Ryan is aided in his present job by a staff of 53. Wheat samples are taken regularly and checked for moisture, temperature and signs of insect infestation.

A second Eastern floating warehouse is anchored in the James River near Fort Eustis, Va. Comprising 70 ships it carries 15¼ million bushels of wheat. Less grain per ship is stored because of more demanding climatic conditions.

Emulsifiable pyrethrins and piperonyl butoxide* insecticide concentrate is mixed with water by Ben Oppenheim, in charge of spraying operations for Industrial Fumigation Co., New York. His firm was awarded contract to carry out spraying of wheat during summer months when grain is most susceptible to insect invasion. Insecticide, produced by Fairfield Chemicals, a division of Food Machinery and Chemical Corp., New York, is used to protect government surplus wheat stored aboard the Hudson River and James River (Va.) fleets.

Supervised by Charles W. Bovard the James River fleet is sprayed with Fairfield's product by the Industrial Fumigant Co. of Kansas City, Mo. Two other fleets serving a similar purpose are located on the Pacific coast.★★

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Hazardous Labeling Hearing . . .

Senate passes hazardous substances labeling bill Mar. 29. Unanimity marks House bill hearing Mar. 14.

ADOPTION of certain amendments to the "Federal Hazardous Labeling Act," H.R. 5260, were the subject of a hearing held in Washington, D. C., March 14. The hearing was held by the subcommittee on Health and Safety of the Committee on Interstate and Foreign Commerce of the House of Representatives. H.R. 5260 is the companion bill to S. 1283, introduced last year by Senator Warren Magnuson, Democrat of Washington, who is chairman of the Interstate and Foreign Commerce Committee. The Magnuson bill was passed and sent to the house March 29. The Senate bill was reported out with amendments by Sen. Magnuson on March 10, having been passed by the Senate committee on February 24.

The draft of H.R. 5260 as presented at the March 14 hearing is practically identical with the final version of S. 1283. It incorporates the same amendments proposed by the Chemical Specialties Manufacturers Assn., American Petroleum Institute, Manufacturing Chemists Assn., and Association of American Soap and Glycerine Producers, Inc. The amendments were developed in cooperation with the U. S. Department of Health, Education, and Welfare. The essentials of the law and its modifications were fully reported in the September 1959 issue of *Soap and Chemical Specialties*, following Senate committee hearings on S. 1283 in August.

Primary purpose of both bills is establishment of standards for the labeling of hazardous substances which are used in and about the household but which are not regulated by existing laws. The Federal Caustic Poison Act, which would be repealed and replaced by the new bills, was enacted in 1927. The Act lists 12 chemical substances which are required to be labeled if packaged for household use. However, this law has been found inadequate in view of the numerous new chemicals which are commonly used in today's household.

Economic poisons are regulated by and must be labeled according to provisions of the Federal Insecticide, Fungicide, and Rodenticide Act, which is administered by the U.S.D.A. Foods, drugs, and cosmetics are subject to the provisions of the Federal Food, Drug, and Cosmetic Act. Substances which do not belong in either of these categories are not regulated with respect to precautionary labeling at the Federal level, except for the 12 chemicals listed in the Caustic Poison Act. S. 1283 and its companion bill, H.R. 5260, would, it is hoped, fill the gap mentioned above.

Testimony given at the March 14 hearing, indicated that basic aims and principles of the proposed bills are unanimously approved not only by the interested industry trade associations and government agencies mentioned above but also by the Toilet Goods Association and the American Medical Association's Committee on Toxicology. However, both FDA (Health Education and Welfare) and AMA voiced certain reservations.

Dr. E. G. Klarmann

Chief witness for industry at the hearing was Emil G. Klarmann, vice-president in charge of technical services of Lehn & Fink Products Corp., New York, and chairman of CSMA's Precautionary Labeling Committee. Testifying on behalf of CSMA in support of H.R. 5260, Dr. Klarmann expressed the belief that if H.R. 5260 and S. 1283 are identical, their enactment this year is much more likely.

Stressing the importance of the time element he pointed out that the States of Michigan and Washington have temporarily refrained from enacting a law regulating the labeling of hazardous substances, pending the passage of H.R. 5260, which, it is believed, will serve as a model for future state legislation. Other states are studying labeling in preparation of the 1961 legislative session, Dr. Klarmann said. The history of the Food, Drug, and Cosmetic Act, and of the Federal Insecticide, Fungicide and Rodenticide Act show that the Federal statute frequently serves as a uniform bill for enactment at the state level, Dr. Klarmann pointed out. He stressed that "Uniformity of precautionary labeling is most desirable for the consumer who will come to recognize and understand the pattern of precautionary labeling and, of

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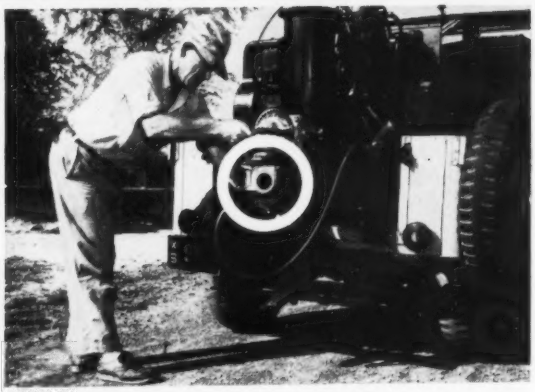

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course, uniformity is essential to manufacturers who distribute products in interstate commerce for sale on a nation wide basis."

Among the most important parts of the bill which have been amended is the definition of the term "hazardous substance." The phrase now covers a substance or mixture of substances which is either toxic, corrosive, an irritant, a strong sensitizer, flammable or one which generates pressure through heat, decomposition, or other means. These categories, according to Dr. Klarmann, include all known classes of hazards in household products excepting radiation which is dealt with separately.

Any product within this definition is subject to the provision of the bill, only if it may cause substantial personal injury or illness during or as a proximate result of any "customary or reasonably foreseeable handling or use." This limitation is a safeguard against overlabeling which would defeat the purpose of the bill.

Ingestion by children, if reasonably foreseeable, is included among the hazards covered. The Secretary of HEW has the authority to term substances hazardous within the meaning of the law and to strike substances from the list if they are covered by other legislation, or if sufficient safeguards have already been established.

Radioactive substances, for instance, are considered "hazardous" under the act only if the Secretary of HEW, by individual regulation, rules a substance to be sufficiently hazardous to require the labeling provisions in the interest of public health. Certain radioactive substances are already adequately regulated by the Atomic Energy Act and are therefore outside the scope of this law.

While the secretary is authorized to conduct examinations, inspections and investigations for purposes of enforcement, the bill also contains provisions to safeguard trade secrets.

Essentially, a label must include the name and place of the business of the manufacturer, packer, distributor or seller; name of the hazardous ingredient; the signal word "Danger" on extremely flammable, corrosive or highly toxic substances; the signal word "Warning" or "Caution" on all other hazardous substances subject to the bill; an affirmative statement of the principal hazard, such as "Flammable," "Vapor Harmful"; precautionary measures; instructions for first aid treatment; the word "Poison" for substances defined as highly toxic; instructions for handling and storage of packages; the statement "Keep out of the reach of children" or "Keep out of the reach of infants," which ever is appropriate.

Larrick's View

In spite of the unanimous support accorded the two bills there are certain areas of disagreement between the interested parties. The most basic of these were voiced in testimony presented at the hearing by George P. Larrick, Commissioner of Food and Drugs, U. S. Department of Health, Education, and Welfare. He expressed apprehension that gaps may be left in the protection the bill should afford in the case of foods, drugs and cosmetics. It would exclude from coverage foods, drugs, and cosmetics subject to the Federal Food, Drug, and Cosmetic Act. On the other hand it would repeal the Federal Caustic Poison Act, which applies the labeling requirements of the caustic poison law to foods, drugs and cosmetics.

Mr. Larrick expressed doubt that the necessary warning labels could be required by his department under the provisions of the Food, Drug, and Cosmetic Act. Since the industries concerned objected to foods, drugs, and cosmetics labeling being regulated under a Federal Hazardous Substances Labeling Act FDA drafted a Title II amending the Food, Drug and Cosmetic Act to furnish the consumer protection deemed necessary by the department. (Title I would be the Hazardous Substances Labeling Act.) Earlier objection to this amendment by a member of the food industry making a pressurized food package has been overcome, Mr. Larrick reported. A proposed amendment applying to cosmetics was patterned after a draft by the Toilet Goods Association and is acceptable to TGA. However, the Proprietary Association representing the drug industry objected to FDA's original proposal and is still opposed to the agency's recently modified labeling requirements for drugs.

The controversy includes among others such cosmetics as permanent wave neutralizers, certain drugs, such as salicylates, pressurized food and other packages, and products containing ammonia in concentrations previously covered by the Caustic Poison Act.

Senate Bill 1283 was passed on March 29 without FDA's proposed amendment.

Testifying on behalf of the American Medical Association, Dr. O. Benwood Hunter, Jr., pathologist of Washington, D. C., conveyed the group's endorsement in principle of H.R. 5260 and S. 1283. However, AMA would like to see the scope of these measures expanded beyond household use to encompass packaged chemicals for "non-manufacturing purposes." This would give protection to the workers who do not enjoy the protection of intra-mural safety programs, AMA contends.

The association would like to see symbols used as warnings: skull and cross bones for poisons, an exploding article for explosives; a corroded hand for corrosive substances, etc. Such a system is currently being used by the International Labor Organization of the UN. Similar provisions should be applicable to export shipments, AMA suggests.

Furthermore, the association believes that the warnings should be graded according to degree of toxicity of the substance.

(*Turn to Page* 184)

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How to save time in

Chemical Specialties Distribution

By William F. Dahms*
R. M. Hollingshead Corp.
Camden 2, N. J.

SHIPPING and distribution is the lifeline of any business. A sale is resolved by getting the merchandise or material to a retailer or wholesaler on time. The company that can get its goods to the market first and fastest makes the sale. Transportation cannot be treated as an afterthought, or as an orphan activity. There is increasing proof that it exercises a critical influence on profits between the point of sale and payment for merchandise delivered. Shipping today has become more of a science than ever before. Modern material handling methods intelligently applied have not only speeded up the shipping operation but have also reduced costs drastically. Today, it is essential that most companies have a "material handling department" to place all handling storage and movement of material within one department to utilize space and personnel to its fullest degree. It is interesting to note that material handling costs may vary from 25 to 60 per cent of manufacturing costs while transportation may account for as much as 50 per cent of the selling price. If handling of goods is reduced, time, plus labor or dollars, are saved. One of the most important pieces of equipment in the shipping department that would illustrate this point is the pallet. With it one man can move a great many pieces of material at one time and a large quantity can be stored in less space, in addition to the fact that the material is moved more quickly.

Shipping actually starts at the end of the production line. Management now pinpoints physical distribution, the job of moving the product from the end of the production line to the customer's plant or warehouse, as the third largest cost item in doing business. Goods could be shipped directly from the end of the production line to the outbound vehicle going to the customer or, in quite a few companies like most chemical specialties industries, goods go directly into stock.

Shipping Department

To operate a shipping department properly, one must have the tools with which to utilize his knowledge to the fullest extent bearing in mind the needs of the company he works for, together with those of the customer. Shipping and distribution are really branches of traffic management which should control the whole transportation system of any company. Effective traffic management requires one department headed by one man upon whom rests the responsibility of passing to top management traffic information covering everything from material handling to distribution for the day to day operation of the company. In divided control, each branch would try to outdo the other and, in the end, the company would suffer. Modern traffic management keeps top management informed on latest freight rate increases and how they may affect the price of company products. It suggests means of reducing transportation costs, makes analyses of the best locations for warehouse and distribution points, keeps abreast of the latest information relative to regulations on transportation, packaging, and documentation, indicates potential marketing areas with rate advantages. All of this necessarily affects your shipping operation.

Shipping is not just a matter of calling a carrier in and giving him a shipment for delivery. Much more goes before giving the shipment. There are quite a few regulations that must be met and observed before the shipment may leave. As examples: Interstate Commerce Commission regulations covering correct packaging, bill of lading forms, namely: straight, order notify or COD, depending on the terms of sale, value of commodity if shipped on released valuation, correct classification, label requirements (red green, white or blue) determined by the type of commodity.

In preparing shipping documents, one of the main items to be considered is the correct classification of the product on the bill of lading. Use of trade names can double the normal shipping costs, because carriers would bill freight at the highest rate. For instance, cleaning compounds take a rate which is 55 per cent of a class 100 rate on less than truckload or less than carload shipments. If a shipper uses a trade name, the carrier

*Talk delivered at the 46th annual meeting, Chemical Specialties Manufacturers Association, Washington, D. C., Dec. 8, 1959.

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may charge the highest class on 100 rate because there is no other rate for the item.

Routing is another factor that can be very important. Some carriers protect rates lower than other carriers on certain commodities. Depending on quantities shipped, certain means of transportation cost less than others. To guide its people through the maze of transportation possibilities, Motorola, Inc. developed the guide shown. This sums up the accumulated experience of years. To keep it abreast of changing conditions, the traffic department reviews it once a year. It is used by purchasing, sales, the field selling force, and local plant traffic departments. General traffic manager Gerald Werner says, "This form in combination with other forms has in the past few years enabled us to make an estimated savings each year of about $200,000 by reducing premium freight costs."

Transportation costs today are double or more what they were 10 years ago. *Dun & Bradstreet Review* and *Modern Industry* surveys report that companies are seeking solutions for soaring trans-

TRANSPORTATION DATA

TRANSPORTATION MEDIA	DESCRIPTION	BEST APPLICATION (NORMAL)	CAN BE: TRACED	CAN BE: EXPEDITED	COST COMPARISON	REMARKS
Railway Express	Freight handled by Express Co. on passenger trains. Complete pick-up and delivery.	Between large cities where fast passenger service is available.	No	Difficult	Generally cheapest way under 50#.	Between many points service not as good as single line truck or freight forwarding.
Truck	Motor Truck	For all shipments over 50# not requiring emergency air service.	Yes	Yes (in advance)	Most economical method of shipping over 50#.	Recommend truck routings when single line service is available.
Freight Forwarding	Truck pick-up for assembly into large lots for forwarding via rail carload. Includes truck delivery at destination.	For all shipments over 50# not requiring emergency air service.	Yes	Yes (in advance)	Most economical method of shipping over 50#.	Freight Forwarding's service is superior to motor truck service to many off-line & out of the way places, especially west of the Rockies, Florida, New England, Texas & Ariz. Should never be used on shipments of 10,000# or more without consulting Traffic Dept. (Full carload rate not protected.)
Air Express	Complete pick-up and delivery air service using all commercial airlines.	Extreme emergency only! (One day service in most cases.)	Yes	See Remarks	Three to four times more costly than air freight service generally.	We have no choice of airlines used or routing chosen by Express Co.
Air Freight Three Types	Type #1— Regular passenger airlines which also handle air freight. Extra charge for pick-up and delivery.	Rush shipments over 30#. Usually as fast as air express. One day most cases.	Yes	Yes (in advance)	2½ to 3 times more costly than truck or freight forwarding. About the same as Railway Exp. over 50#.	Air freight may be delayed to next flight by Air Exp. or mail. (Very rare.)
	Type #2— Air carriers handling Freight only. (Slick-Flying Tigers.)	Rush shipments over 30#. Usually as fast as air express. One day most cases.	Yes	Yes (in advance)	Same cost as commercial air freight. (Type #1)	Cannot be delayed by Air Express and mail.
	Type #3— Brokerage service using all commercial airlines. Complete pick-up and delivery. (Emery Air Freight Wings & Wheels, American Shippers)	Extreme emergency only! As fast or faster than Air Express with better control.	Yes	Yes (in advance)	Usually more costly than Air Express (Except over 100#. Always more costly than Air Freight, (Type #1).	We have no choice as to airlines used or routing chosen.
Rail Carload and Truckload	Full rail car or motor truck.	Where quantity is sufficient to warrant. (Differs with product.)	Yes	Yes (in advance)	By far the cheapest of all methods of transportation.	Total charges depend upon minimum weight required, routing used, and many other factors. Contact Traffic for best method.
Parcel Post	Fourth class regular mail.	Up to 10# where time in transit is not important.	No	No	Always cheaper than Railway Express.	Cost comparisons vary considerably with origin point, size and weight of package, etc. Generally not advisable except on very small packages.
	Fourth class Air mail.	Very small rush shipments.	No	No	Roughly same as Air Express up to 10#.	See above.

TRACING

Tracing is necessary to locate and effect delivery of shipments that have been delayed in transit and not delivered in what would be considered normal transit time.

Learn how soon tracing of a shipment should begin. It is unreasonable to trace a shipment that has not had ample time to reach destination.

EXPEDITING

Expediting of any shipment begins before the goods are actually shipped. Use discretion in expediting. To expedite everything may be to expedite nothing.

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portation costs by many other methods, from rate negotiation to operations research. Whatever the method, these firms realize that the alternative is to restrict the company's effective marketing area. Several of more than 300 surveyed companies have already been forced by their inability to control transportation costs to pull back into local markets like tortoises into their shells. But like the tortoise, they will be seriously handicapped as the competitive pace quickens in the years ahead. Competition, being keener than it was 10 years ago, is forcing the science of shipping into industry. In order to give the customer the best price, together with the type of service he wants, one must analyze the operation and see how costs can be cut without cutting efficiency.

Automated Paper Work

Here is an example of action taken by one large company to improve efficiency and yet give better service to its customers. This firm manufactures about 3,000 different items in the automotive chemical, sanitary maintenance, protective coating and household lines. Orders range anywhere from one item to 100. As they are received by the different sales departments, they are recorded and sent to the order department to be placed on invoice forms. A billing machine called a "Friden Computyper" is used, which types the invoice, the bill of lading and the stencil-label showing the "shipped to" address, all in one operation. This avoids any possibility of discrepancy between invoice, bill of lading and address on the merchandise. In this operation, all of the customers' names are previously printed on a tape which carries all pertinent data showing correct shipping address and customer name, together with his code number. All commodities are printed on another tape showing how the merchandise is packed, the quantity in each package and the type of container. These tapes are placed in the billing machine, which automatically types the invoice bill of lading form. The operator just inserts the date together with the quantities ordered. The machine takes care of the rest, including the number of cartons or drums based on the quantity of units ordered. The shipping order and packing list, together with the bill of lading and stencil-label attached, are then sent to the shipping office.

It might be well to note here that this company manufactures many items other than its own brand. Each shipment of custom label goods must be handled as though it were being shipped from the individual customer's own platform, which creates a clerical problem. A record must be kept of terms of sale, shipping notice forms, whether to ship in the company's name or in the customer's name. Most orders cannot be backordered and must be shipped complete which means, if there are 10 items on an order with one out of stock, the entire order must be held until the one item comes in stock. It can be readily seen what could happen if the order were partly shipped. Not only would it mean the expense of double paperwork, but most likely the item backordered would take a minimum freight charge, which is approximately 2.5 times what it would have cost had the item been shipped with the entire order.

As the orders are received at the shipping office, they are entered in an order register in numerical sequence, then stamped showing the time received. Availability for shipment is then determined and broken down as follows: orders immediately shippable, orders specifying future dates for shipment and orders comprising material which is short or not yet available pending special manufacture. Orders are then separated by brands. Prior to assignment to the order pickers, they are then scanned for the possible advantage of picking directly from reserve stock.

All stock on the first floor of the shipping area is stored in racks on pallets for the picking of orders calling for less than pallet load lots. It is therefore, necessary to scan the orders for rack replenishment requirements and the movement of full pallets to shipment directly from reserves. On quantities involving less than 6,000 pounds, each case or drum on the order must be stenciled. All orders that have been found to be unworkable are consigned to a temporary hold file and checked daily as to whether they can be shipped. Workable orders are assigned on the basis of a full workload per man per day with the order number recorded by worker. As each pallet load order is completed, the load will be dropped at the rack ends. Periodically a lift truck operator will transport the pallets to the shipping dock area which is bayed up according to the carriers that will be used for different destinations.

Completed Order

The completed order will be returned to the shipping office, where the time necessary to complete the order is recorded, together with the number of pieces and whether the order was partially stenciled according to size. The shipping order is then matched with the corresponding bill of lading in the shipping office file. They are placed in a compartment file broken down by names of carriers. A running total of tonnage for each carrier is kept. When such total reaches 6,000 pounds, the carrier is called specially or the order might be held for consolidation with other orders to make stopoff truckloads. Otherwise, a certain number of "call carriers" will come to the shipping platform every day. These are the carriers with whom daily business is transacted and who, according to past experience give the best service. There is also a cartage agent who hauls freight from the platform to certain carrier terminals with whom they have cartage agreements. Cartage agents are used in

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order to keep carriers calling at the platform to a minimum.

Distribution, Warehousing

In distribution, the strategic location of warehouse or distributing center is of prime importance. Transportation agencies have to be readily accessible and service from plant of manufacture must be frequent and prompt. Freight costs today vary anywhere from 10 to 50 per cent of the invoice value. Small or LTL or LCL shipments may cost approximately twice as much as the proportionate part of a large truckload or carload shipment. Theoretically speaking, if all orders were large truckload or carload orders, freight costs would be cut approximately in half, which is a considerable reduction. Service is generally better for larger shipments. A truck or car is loaded at one place and not touched until it is unloaded by the consignee at destination. In smaller LTL or LCL shipments, an order might be handled three or four times before it is finally delivered to the consignee. To aid distribution, one may use a method known as zone selling, in which sales are concentrated in one area at a time, in order to coordinate customer requirements and ship to one centrally located city in carload and truckload lots and distribute goods from there to nearby smaller customers. The costs are naturally higher than for shipping larger orders to customers directly, but not as high as for shipping small shipments to customers over a longer distance. Also, small direct shipments require much more handling, thus adding to the delay in getting the goods to the customer. Distribution at a given city can either be handled by a warehouse or a distributing company. In analyzing distribution, it is best not to overlook possibilities offered by the public warehouse. Their use will often avoid the investment in brick and mortar decried by advocates of premium transportation. The cost is for the space and labor used. An additional advantage is the accuracy with which distribution costs can be predicted and budgeted. In selecting a warehouse for distribution, one must ensure that the goods are protected and given the best handling possible. A good yardstick for evaluating a warehouse is an insurance report showing coverage.

An efficient distribution setup can and does save money besides giving good service to the customer. Within the last few years, a new and important executive has emerged: "the distribution manager." In modern organizations he carries complete responsibility for integrating all distribution operations from the time the product leaves the production line until it reaches the customer.

What's Ahead?

Who knows what the future will hold? Within the next few years, production methods in this country will change drastically. Automation is spreading rapidly and, in the process, the job of moving materials to and from machines, largely a matter of muscle before the war, is becoming largely a matter of mechanics. There is the operatorless industrial tractor, improved pneumatic tube communication, conveyorized storage racks, automatic pallet loaders, and the lift truck which has been sprouting new attachments every time you turn around, just to name a few.

Here are some pointers on how to cut distribution costs. Quoted from *Dun & Bradstreet Review* and *Modern Industry* they reflect views of executives from a wide range of industries:

1. Reassess markets
2. Analyze total distribution costs
3. Eliminate preventable handling costs
4. Take a new look at product design and packaging
5. Keep after run of the mill traffic economies
6. Keep up with what carriers can offer

Bedding Disinfectants

(*From Page* 76)

action, particularly at low temperatures, (b) easy removal or dissipation by simple airing, (c) noninflammability at sterilizing concentrations, (d) lachrymatory, but less irritating than formaldehyde, and (e) ready hydrolysis by water and alkaline solutions. Under laboratory conditions, using cotton patches contaminated with *Staph. aureus* and *B. globigii* spores, exposure to 1.6 mg. of lactone per liter of air for two minutes at 25°C. effected a 90 per cent kill.

(*To be Continued*)

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The tie lines in Figures 5 through 7 and in Figures 9 and 10 seem to indicate considerable areas of compatibility at higher silicate concentrations.

3. Temperature Effects

The effect of lower than ordinary room temperatures on border line cases between stable and non-stable mixtures was noted by placing some mixtures in a refrigerator at about 5° C. It was found that some of these mixtures that are stable at room temperatures will crystallize when cooled to about 5° C. However, many of these crystals redissolve at room temperatures depending upon the concentration of the silicate and the type of phosphate.

With "E" silicate and $K_4P_2O_7$, mixtures that contain up to 7% less silicate solids than those along the boundary for the area of crystallization at room temperature (22% silicate solids) also crystallize when cooled to 5° C. When the pyrophosphate concentration is increased crystallization is avoided, but increasing the silicate concentration increases the crystal formation. All these crystals redissolve at room temperature except those from mixtures whose silicate solids

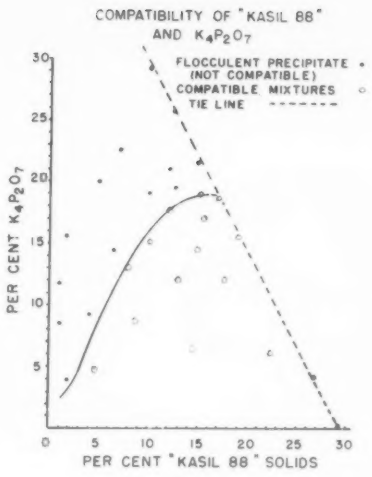


Figure 5

content are within 0.5% of the boundary line.

Stable mixtures of "E" silicate and $Na_4P_2O_7$ which are about 1% beneath a tie line extending from 6% $Na_4P_2O_7$ to 36% "E" silicate solids will crystallize when cooled to approximately 5° C. These crystals do not redissolve at room temperatures. This amounts to a further reduction in the area for stable mixtures.

Mixtures of "E" silicate and $Na_5P_3O_{10}$ which are stable at room temperatures and whose composition is along or beneath a tie line extending from 20% $Na_5P_3O_{10}$ to 36% "E" silicate solids do not crystalize when cooled to approximately 5° C.

Stable mixtures of "Star" silicate and each of the phosphates behave similarly to the "E" silicate-phosphate mixtures.

None of the potassium silicate mixtures with either sodium or potassium phosphate crystallized when cooled; not even those whose composition on a mol ratio (silicate/phosphate) basis was the same as the sodium silicate-phosphate mixtures which crystallize on cooling.

4. Common Ion Effect

Star sodium silicate and 1.62 potassium silicate each have approximately the same SiO_2/alkali metal oxide mol ratio (2.5:1). $Na_4P_2O_7$ and $K_4P_2O_7$ have the same mol ratio of P_2O_5 to alkali (1:2) and $Na_5P_3O_{10}$ has a mol ratio of 1:1.67). Comparisons of the stability of mixtures of each phosphate with each silicate on a mol per cent basis show that in general the combination of a silicate and phosphate with unlike cations is more stable than one with like cations. This is more noticeable in Figures 8 and 10 than in Figure 9. However, the mixtures along the tie line (a-b) for $Na_5P_3O_{10}$—"Kasil" 1.62 mixtures (Fig. 9) are stable, indicating that mixtures prepared from a "Kasil" 1.62 concentrated to a higher solids content would also be stable, thus increasing the area of compatibility for mixtures of these compounds.

Stable solutions containing

Figure 6

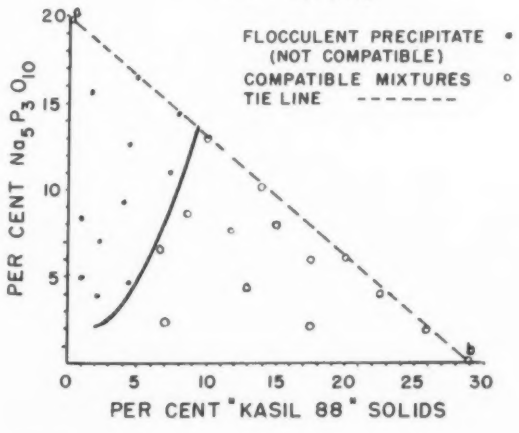
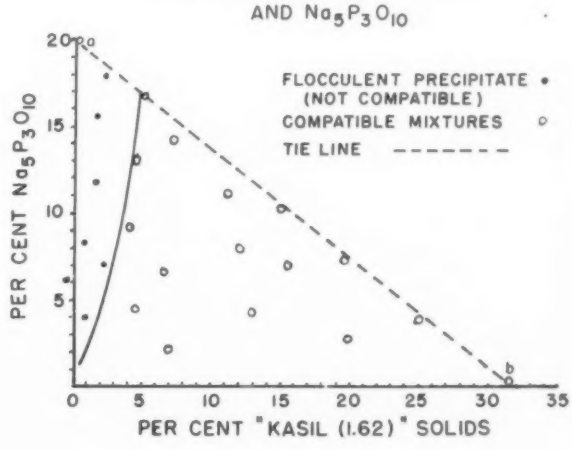


Figure 7



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up to 40% solids were prepared from combinations of "E" or "Star" silicate and $K_4P_2O_7$, and up to 20% solids with $Na_5P_3O_{10}$. Combinations of potassium silicates, "Kasil" 88 with $K_4P_2O_7$ and "Kasil" 1.62 with $Na_5P_3O_{10}$, form stable solutions containing up to 35% and 20% solids respectively. Factors that affect the stability of silicate-phosphate mixtures are:

1. *Solubility of phosphate used:* $K_4P_2O_7$, which is more soluble than either $Na_4P_2O_7$ or $Na_5P_3O_{10}$, is also more compatible with silicates.

2. *SiO_2/alkali metal oxide ratio of the silicate:* Mixtures containing the more siliceous silicates are more stable than those relatively high in alkali.

3. *Common ion effect:* Silicates and phosphates with unlike cations are more compatible than those with like cations.

4. *High phosphate—low silicate concentrations:* At these conditions flocculent precipitates occur due to acidity of phosphate toward the silicate. At silicate solids concentrations above 5%, flocculation decreases. Some crystals may develop in this area with mixtures containing $Na_5P_3O_{10}$.

5. *High silicate concentrations:* In mixtures with $K_4P_2O_7$, crystals develop at high sodium silicate concentrations (about 20%). The limiting concentration decreases with silicate having a higher proportion of alkali relative to the silicate. The crystals are hydrated $Na_4P_2O_7$, indicating that the less soluble sodium salt rather than the more soluble potassium pyrophosphate is crystallized.

There is little if any crystal formation with mixtures containing $Na_5P_3O_{10}$ at high silicate concentration. The same is true with potassium silicates and any of the phosphates within the concentration limits of the two substances.

6. *Low temperatures.* Reduction in temperatures to about 5° C. tends to crystallize stable mixtures of sodium silicate and phosphate ($Na_4P_2O_7$ but not $Na_5P_3O_{10}$), which are close to the boundry line separating areas of stable mixtures and crystal formation. However, many of the crystals redissolve at room temperatures (about 23° C.).★★

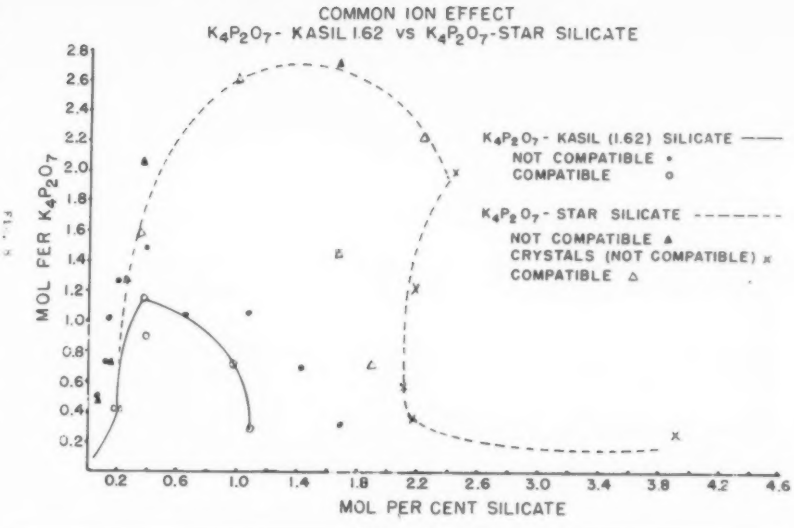

Figure 8

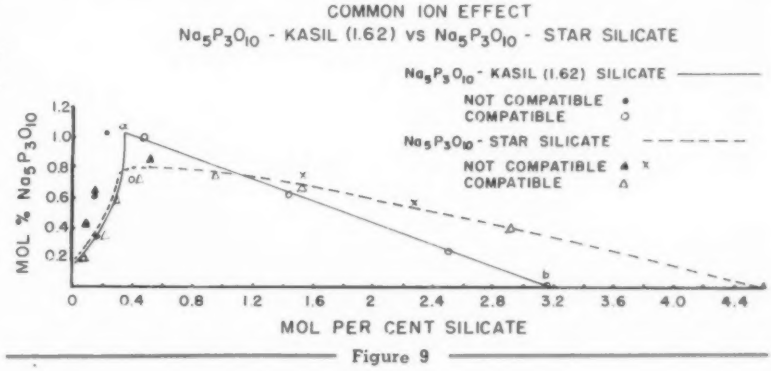

Figure 9

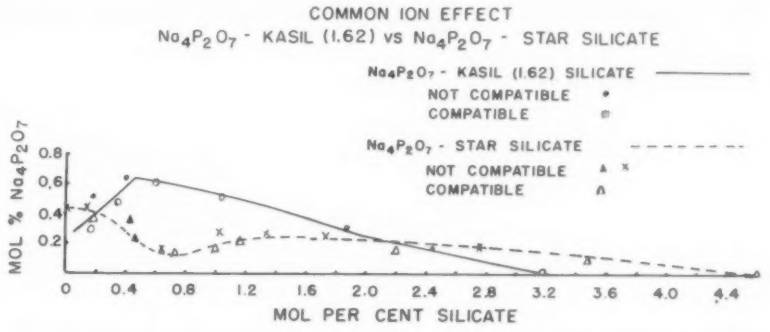

Figure 10

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(3) Raymond Getty, Newton W. McCready and William Stericker: *A.S.T.M. Bulletin, No. 205,* (1955)

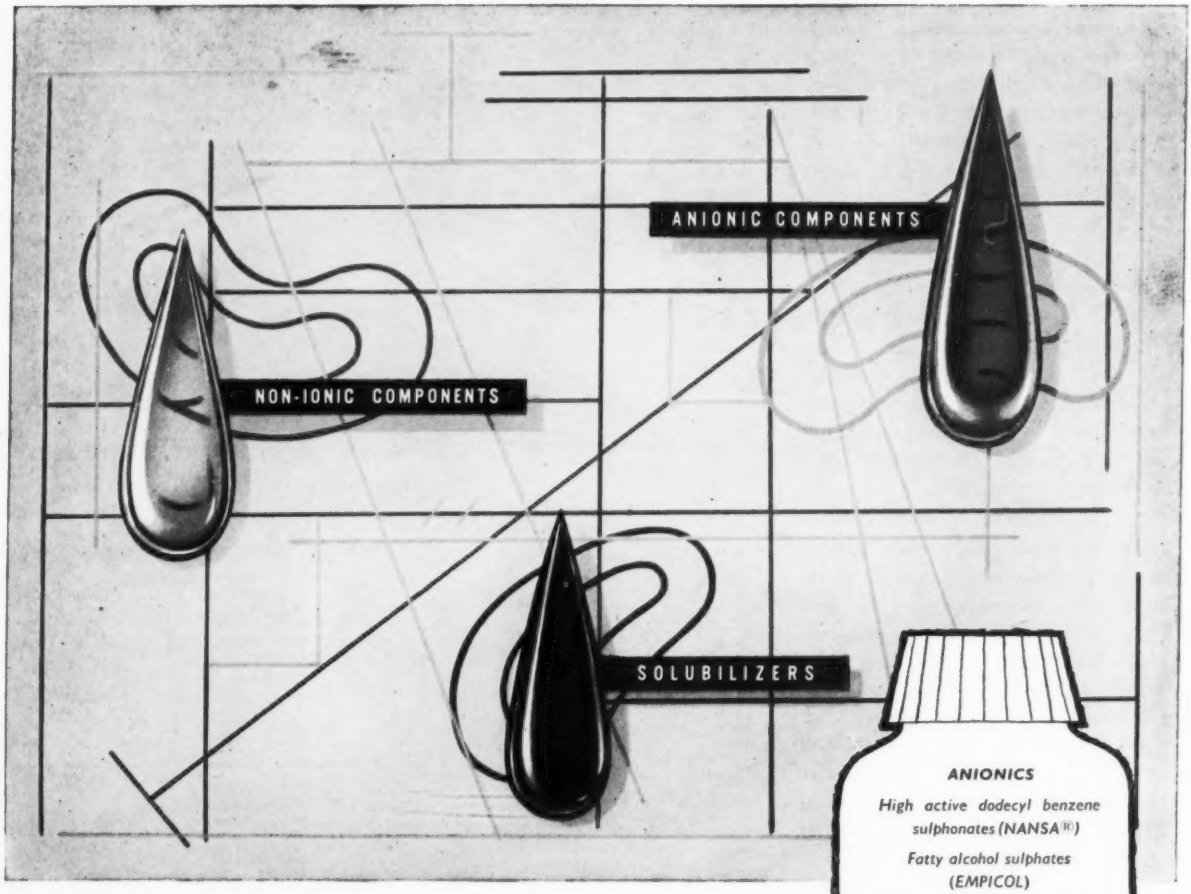
(4) Work still in progress because of long storage times required.

★

"Piccolyte" Price Rise

The price of "Piccolyte" resins from Pennsylvania Industrial Chemical Corp., Clairton, Pa., was increased on Mar. 1 for all orders shipped after that date. A new price schedule for the resins is available from the company.

Anionics Non-Ionics Solubilizers



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Unique Bacteriostat

(*From Page 58*)

tory evaluation, asphalt tile squares were scrubbed with an alkaline cleaner mixture containing 0.5% TCSA used at one ounce per gallon water. The amount of TCSA applied to the tile was calculated at 0.045 milligrams per square foot surface. A suspension of *Staph. aureus* containing approximately 3.4×10^7 viable cells/ml was then spread over the unrinsed, air dried tile and incubated for twenty-four hours; the viable cell count was reduced to 2.4×10^4/ml. A control tile treated similarly with alkaline cleaner containing no TCSA showed a reduction in viable cell count to only 1.27×10^6. Mop oils, sprays or polishes may be satisfactory vehicles for applying TCSA to hard surfaces.

Dry Cleaning

TCSA exhibits no affinity for textile fabrics when applied in chlorinated solvent. The bacteriostat, however, may be applied by a simple dip technique. Preliminary tests indicate that application in this manner to a variety of fabrics, (including polyester and acrylic fibers) will produce significant bacteriostatic activity as measured by the agar zone of inhibition method.

Summary

Tetrachlorosalicylanilide is a promising new microbiological control agent for use in soaps and detergent products, effective against fungi, Gram-positive and Gram-negative organisms. The compound may be used in toilet soap at 0.5%, also in shampoos and in scrub soap. Addition of 0.1-0.2% to laundry detergents will impart a residual bacteriostatic effect. TCSA's fluorescence offers a convenient method for detecting the compound.

The assistance of the Geigy research and customer service staff is gratefully acknowledged. The data in Tables 1, 2 and 5, and Figures 5 and 6 were supplied by Dr. R. Zinkernagel and staff members of J. R. Geigy S. A. (Basel, Switzerland).

Table 8.

Comparative bacteriostatic activity of tetrachlorosalicylanilide (TCSA), tributyl tin oxide ("TBTO"), Bithionol and a diisobutyl phenoxy ethoxyethyl dimethyl ammonium chloride (OAC) on cotton.

	relative ammonia production in 20 hrs. incubation w. B. ammoniagenes	mm. zone of inhibition vs. S. aureus in nutrient agar
washed once with anionic		
containing no bacteriostat	10.0	0
0.1% TCSA	5.0	1.0
0.25% TCSA	4.8	4.0
0.5% TCSA	3.8	5.5
0.1% "TBTO"	7.0	0.5
0.1% Bithionol	8.1	0
washed five times with anionic		
0.1% TCSA	4.0	6.5
0.1% "TBTO"	4.2	7.5
0.1% Bithionol	7.0	0
washed once with anionic without bacteriostat but rinsed with 316 ppm QAC based on fabric*	7.1	1.0
washed five times with anionic and rinsed five times with 316 ppm QAC	7.4	1.5

*Wash procedure: Temp. 140°F; two suds cycles per wash using detergent: load: liquor: rinse ratio of 1:100:830:500. QAC rinse temperature: 100°F. Using detergent with 0.1% bacteriostat, concentration based on wash load is 21 ppm compared with 316 ppm QAC.

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(3) W. Linfield (1959): Amer. Oil Chem. Soc. Mtg., Sept. 1959.
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Soil Redeposition

(*From Page 51*)

metric method for determining the amount of clay deposited on cotton from a series of suspensions containing various quantities of clay. Aliquots of each bath were taken before and after treatment of the cotton sheeting. The change in clay concentration of the aliquot was determined by evaporation to dryness in a plachet and weighing the clay residue. The dry weights of the cotton fabrics were determined, as well as the reflectance of each. The data are given in Table II and Figure 1. The K/S values were calculated by the Kubelka-Munk equation and the correlation is shown in Figure 2. This is better correlation than has been reported for carbon black and iron oxide pigments on cotton (3, 4), and certainly supports a claim for accuracy.

(*To be Continued*)

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Purex' "Lucky Seven"

(*From Page 72*)

Polish' . . . a completely new non-wax finish that won't scuff or discolor light-colored floors. Dries immediately to a clear, beautifully smooth lustre without polishing. Has a tough durable film that won't powder or scuff under heavy traffic. This also means less dirt penetration, plus a longer wearing finish that eliminates the need for buffing during the maintenance cycle. A definite labor saving factor."

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Epolene N *non-emulsifiable* • Epolene N can improve significantly the properties of paraffin, microcrystalline or other waxes and is easily blended with these materials. It can replace part or all of the hard waxes in solvent paste polishes, for example, automotive polishes. Such polishes are characterized by low color, excellent hardness and gloss, and remarkable durability.

Epolene LV *non-emulsifiable* • Epolene LV and Epolene N are useful in similar applications. The LV type is softer than Epolene N, however, and because of its lower melt viscosity is somewhat easier to handle.

Epolene HD *non-emulsifiable* • An extremely hard material, Epolene HD is nevertheless easy to handle because of its low melt viscosity. It has a high softening point, and may be blended with waxes to increase their melting points. Epolene HD has a higher density than the other non-emulsifiable polyethylenes in the series.

Epolene C *non-emulsifiable* • Higher in molecular weight (7000) but lowest in density (0.907) of all the Epolene resins, Epolene C may be used in modifying waxes to increase melting points or to improve toughness and gloss.

Type	Molecular Weight	Brookfield Viscosity (cps. @ 120°C.)	Density	Penetration Hardness (100g./5sec./ 77°F., 10ths of mm.
Epolene E	2500	1500	0.938	2
Epolene HDE	1500	455	0.956	1
Epolene LVE	1500	400	0.939	5
Epolene N	2500	2500	0.928	1
Epolene HD	1500	340	0.938	0.5
Epolene LV	1500	360	0.925	3
Epolene C	7000	16,000	0.907	7

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The enlarged Purex industrial sales organization has been staffed with men experienced in all phases of floor maintenance product selling. More manpower will be made available to call on and work with jobbers by Purex than by any other firm presently in this field, say Purex spokesmen.

The great intangible, product quality, is the third factor upon which Purex is basing its efforts. Although this may take time to prove out, Purex feels it has the know-how and the skill to provide good products, and asks only an opportunity to demonstrate the new line.

The Purex name with its large and increasing acceptability through television, radio, magazine and newspaper advertising is being counted on to aid in obtaining recognition and acceptance for industrial products as well as those for the home.

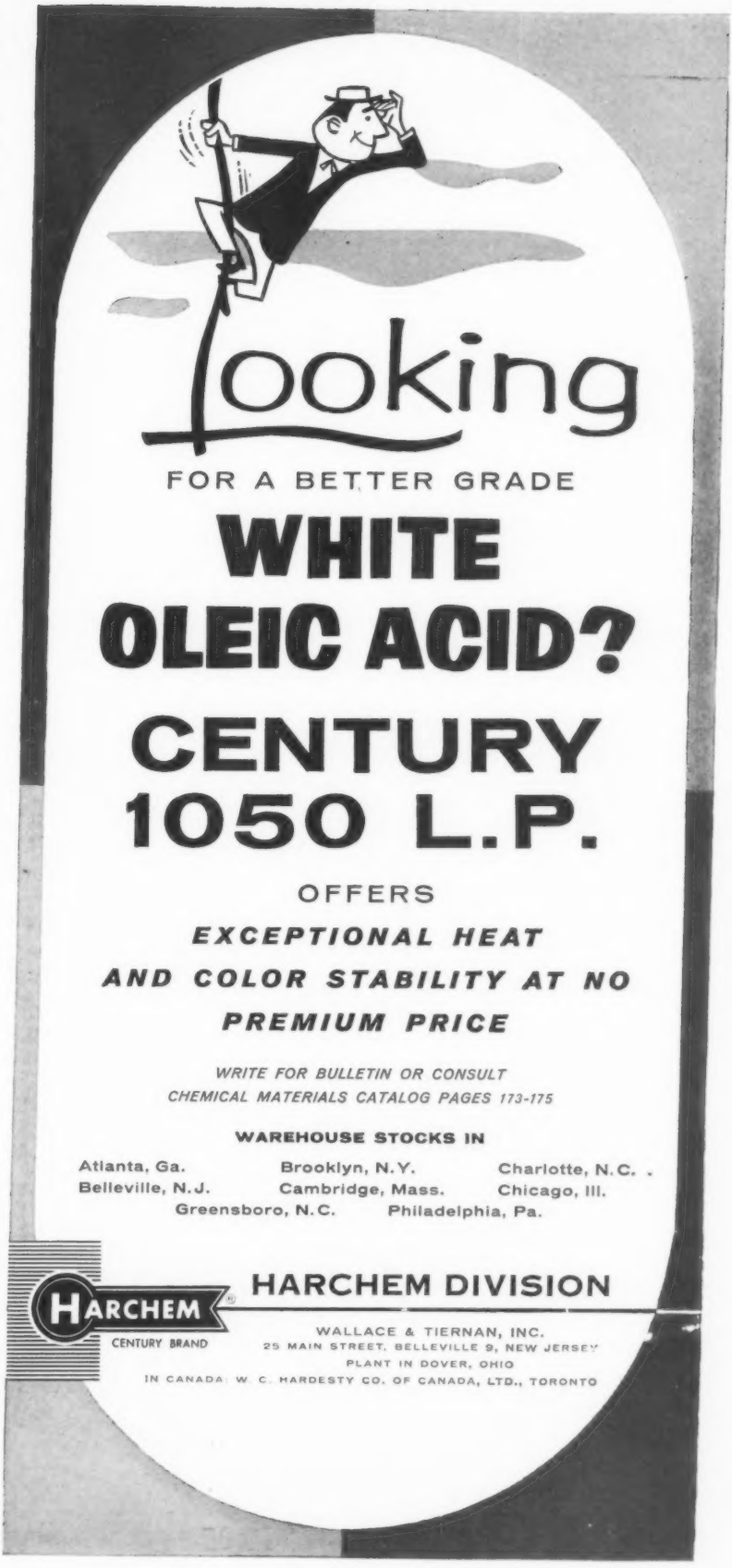
That a gamble is involved in the launching of the new line is implicit in the "lucky seven" theme and the heavy reliance on dice in advertising and promotion. But in this case, Purex feels the dice are "loaded" in its favor.★★

Bacteria Control

(*From Page* 78)

A polish manufacturer has the right to know if the polymers he is using are sufficiently protected. Solid waxes and resins are generally not bacterial carriers, but should be examined for bacteria.

Keeping bacteria counts to a minimum during manufacturing stages is only the first step in marketing a bacteria-free material. The omnipresence of bacteria makes contamination the general rule rather than the exception; thus it is not sufficient merely to provide a product that is sterile initially. Product stability during long-term storage in closed containers must be considered. Even more important are the conditions under which the product will be used by the consumer. Open top contain-



ers, aeration and contact with unsterile mops, applicators, etc. are some of the problems which are encountered. The best recommendation that can be made in this respect, is the use of a chemical preservative as an inherent part of the floor polish formula.

The amount or type of preservative depends on the conditions under which the polish is manufactured. For this reason it is impossible to give a specific recommendation in this regard. An ideal preservative should be: (1) effective in low concentration; (2) readily soluble or dispersible in water; (3) economical; (4) nontoxic; (5) unreactive toward floor polish ingredients and (6) should not cause undesirable odor, color or consistency changes in the product. To our knowledge no single preservative has all of these qualities, but adequate protection can be obtained by careful choice.

We have done considerable work in trying to determine the type and preservative level necessary to protect floor polishes, with particular emphasis on products based on polymer dispersions as the main component. The organo mercurials, of which there are numerous sub-classes, are the most satisfactory general purpose preservatives. We use them to protect our polymers. It should be emphasized that the amount of preservative added by a polymer manufacturer protects his product only. The use of additional preservative is strongly recommended to the polish maker. This should be done because the effectiveness of a preservative is directly proportional to its concentration. It is also desirable to have an excess of preservative to compensate for the possible depletion of preservative during storage. Chemical reactivity with one or more of the ingredients, a fairly common occurrence, can reduce preservative concentration.

Table I. Effect of preservatives on inoculated polymers

Preservative, % of wet wt.	Bacteria count, one day	Colonies per ml. Sample six days
None (no inoculum)	25	7,000
None	1,100,000	46,000,000
Benzoate of soda, 0.1%	230,000	6,200,000
Phenylmercuric acetate, 0.033%	0	0
Pentachlorophenol, 0.05%	2,500	1,000,000
p-Chlorometaphenol, 0.04%	220	400

Table I shows the effect of various preservatives on samples of a polymer dispersion inoculated with 2ml. of inoculum containing

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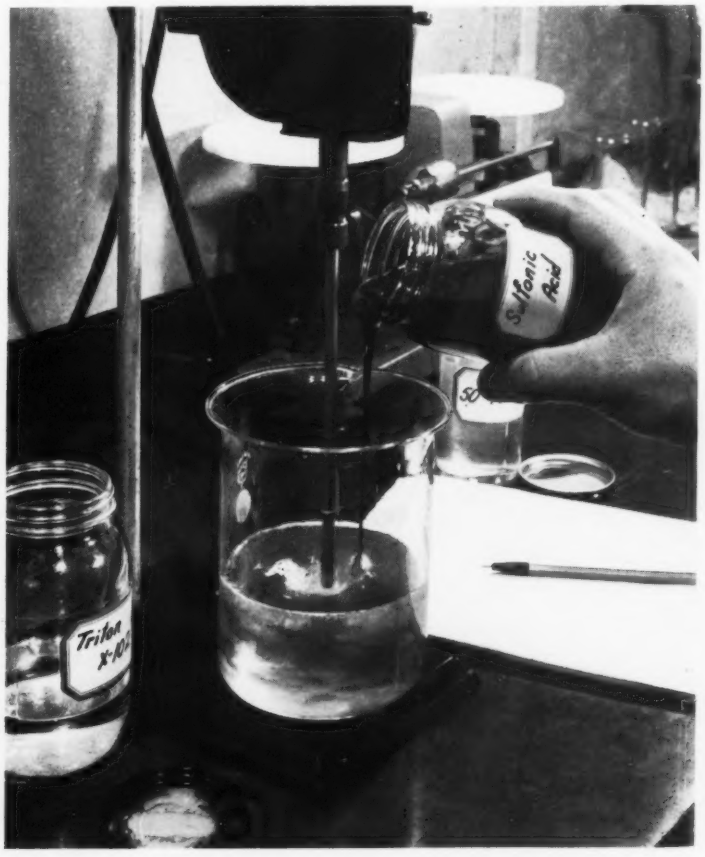

Table II. Effect of phenylmercuric acetate on floor polish ingredients

	Inoculum, ml	PMA Preservative	Bacteria Count Initial	7 Days
Polystyrene @ 14%	0	0	0	1
Wax Emulsion @ 14%	0	0	34,000,000	—
Shellac Solution @ 12%	0	0	1	—
Polystyrene (2/3)-Wax Emulsion (1/3)	0		13,000,000	2,500,000
Polystyrene (2/3)-Wax Emulsion (1/3)	2	0	19,700,000	44,000,000
Polystyrene (2/3)-Wax Emulsion (1/3)	2	0.01%	150,000,000	0
Polystyrene (2/3)-Shellac Solution (1/3)	0	0	426	0
Polystyrene (2/3-Shellac Solution (1/3)	2	0	650,000	1,400
Polystyrene (2/3)-Shellac Solution (1/3)	2	0.01%	1,100,000	0

16,000,000 bacteria per ml. Note that the phenylmercuric acetate was the most effective preservative evaluated.

The efficiency of phenylmercuric acetate was further demonstrated in polish formulations as shown in Table II. Here, an inoculum containing 74,000,000 bacteria per ml. was added individually to a polymer dispersion, a wax emulsion, a shellac solution, then to combinations of polymer and shellac and finally to polymer and wax.

Note that the individual polymer and shellac solutions without inoculum were essentially bacteria-free. The particular wax emulsion, however, was badly contaminated. This is a good example of the contamination that can occur in normal manufacturing procedure. The polymer originally contained 0.007% phenylmercuric acetate preservative. After addition of inoculum, which in this case contained 74,000,000 bacteria per mil., a count of 1400 per mil. was obtained after seven days in the polymer-shellac combination showing that the residual phenylmercuric acetate in the polymer was reducing, but not eliminating the inoculum bacteria. Addition of 0.01 phenylmercuric acetate to the polymer-shellac mixture reduced the count to zero after seven days. The same is true in the case of the polymer-wax mixture which initially showed even higher bacteria counts because of the wax.

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checking bacteria in a product such as floor polishes is inexpensive and the techniques involved are relatively simple laboratory manipulations. Major equipment requirements are an incubator, sterilizer and colony counter. The cost of these, plus auxiliary glassware, represents an investment of less than $400.

There are two tests that are of direct interest in the control of bacteria. The first test provides a measurement of the number of bacteria in a material and is called Initial Count. A typical procedure for determining Initial Count is as follows: Place one ml. of the sample being tested in 9 ml. sterile water, shake, then transfer one ml. of the diluted material to a second 9 ml. water and repeat through five dilutions. Plate a ml. sample from each of these tubes in nutrient agar, incubate 48 hours, and count colonies. The final bacteria count is obtained from the number of colonies multiplied by the appropriate dilution factor.

The second test measures the resistance of the material to bacterial growth after contamination. This may be done by adding one ml. of inoculum containing a known number of organisms to 9 ml. of sample being tested for resistance. The same dilution and plating is carried out as in Initial Count and colonies counted after five to seven days. In this test it is most desirable to use an inoculum having same type of bacteria as that most likely to infect the material. One excellent source of such bacteria is a sample of the same material that has developed bacteria because of improper protection.

Summary

The possible infection of floor polish formulations by bacteria has been described. This possibility can be greatly minimized by maintaining good housekeeping practices and further by the use of preservatives. The effectiveness of such protection can be relatively easily measured in the laboratory.

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Compounding to your specifications

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The first meaningful color stability specifications for fatty acids

	Lovibond Color—5¼" Cell-Y/R Max.		
	Original Color Spec.	Color Stability Specification	Typical Color Stability
EMERSOL OLEIC ACIDS			
233 LL (low-linoleic)	3.0/0.5	10.0/3.0	7.0/2.5
221 Low Titer White Elaine	5.0/0.5	20.0/7.0	15.0/5.0
EMERSOL STEARIC ACIDS			
132 Lily (T.P.)	1.0/0.3	4.0/1.8	2.0/1.3
120 (D.P.)	1.5/0.5	7.0/2.0	4.5/1.5
140 Palmitic	1.0/0.3	6.0/2.0	3.0/1.5
150 High Stearic	1.0/0.3	6.0/2.0	3.0/1.5

These new Emery specifications are meaningful because they are based on the new A.O.C.S. standard test method, the first *reproducible* color stability test. Essentially, method L15a-58 subjects samples to 205°C under a blanket of nitrogen . . . stearic acids for 2 hours and oleic acids for 1 hour.

Thanks to this test, you can now compare color stabilities accurately and confirm positively the superior quality of Emersol Stearic and Oleic Acids.

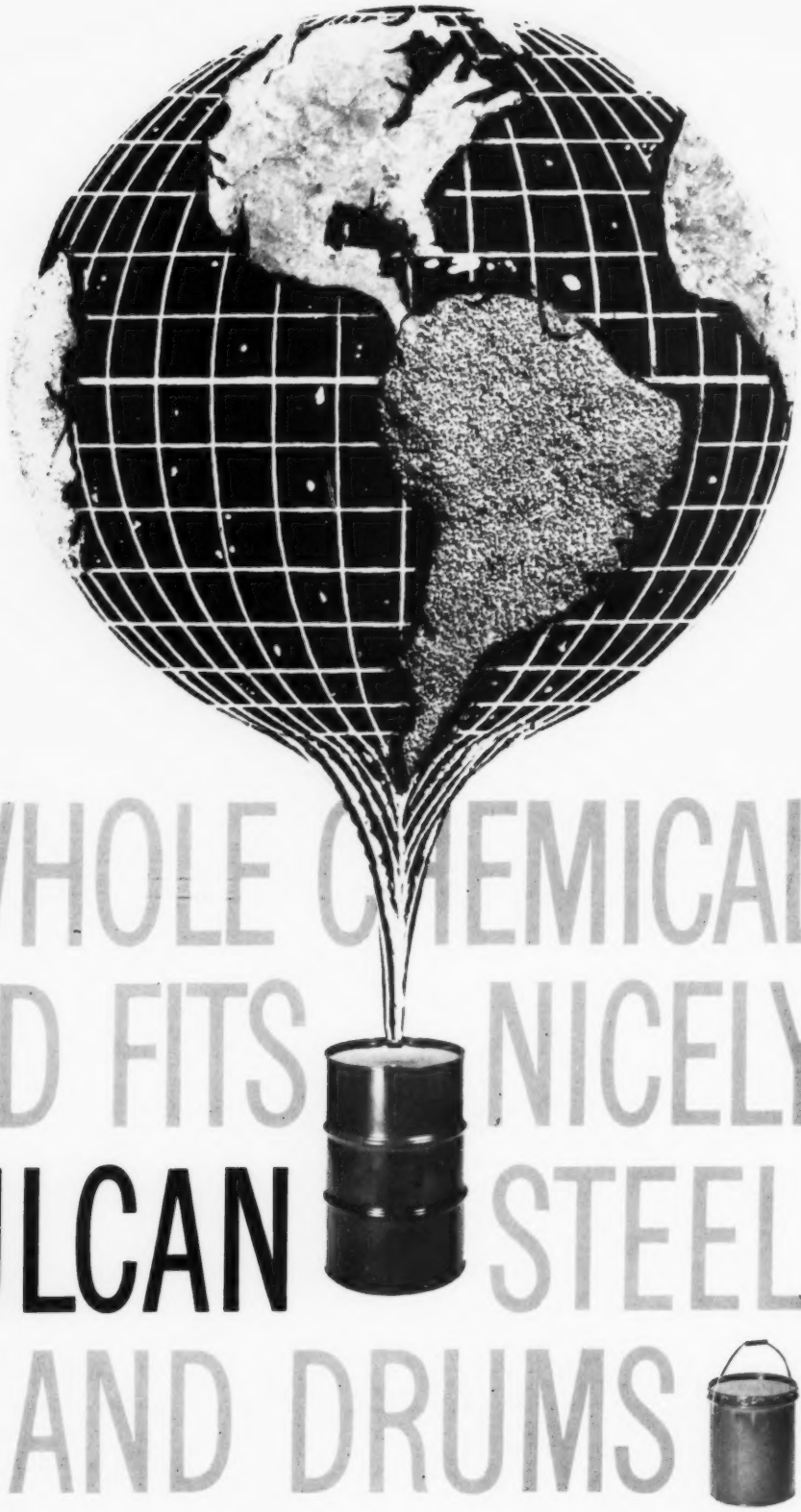
Try them in your product and you will see the difference. For a comparison of these specifications in Lovibond, Photometric Index and Gardner color systems, write Dept. S-4 for a copy of Technical Bulletin No. 222.

Emersol® Fatty Acids

Emery

Fatty Acid Sales Department

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio—Vopcolene Division, Los Angeles
Emery Industries (Canada) Ltd., London, Ontario—Export Department, Cincinnati



THE WHOLE CHEMICAL WORLD FITS NICELY IN VULCAN STEEL PAILS AND DRUMS

Attach this ad to your calling card and mail today for ☐ free literature, or ☐ a meeting with your local 'Vulcansultant' a technical man who can help you with your container problems. • *In California:* Vulcan Containers Pacific Inc., *San Leandro* • *In Canada:* Vulcan Containers Limited, *Toronto, Vancouver, B.C*

VULCAN CONTAINERS INC., *Bellwood, Illinois, Phone: LInden 4-5000*

SCS-40

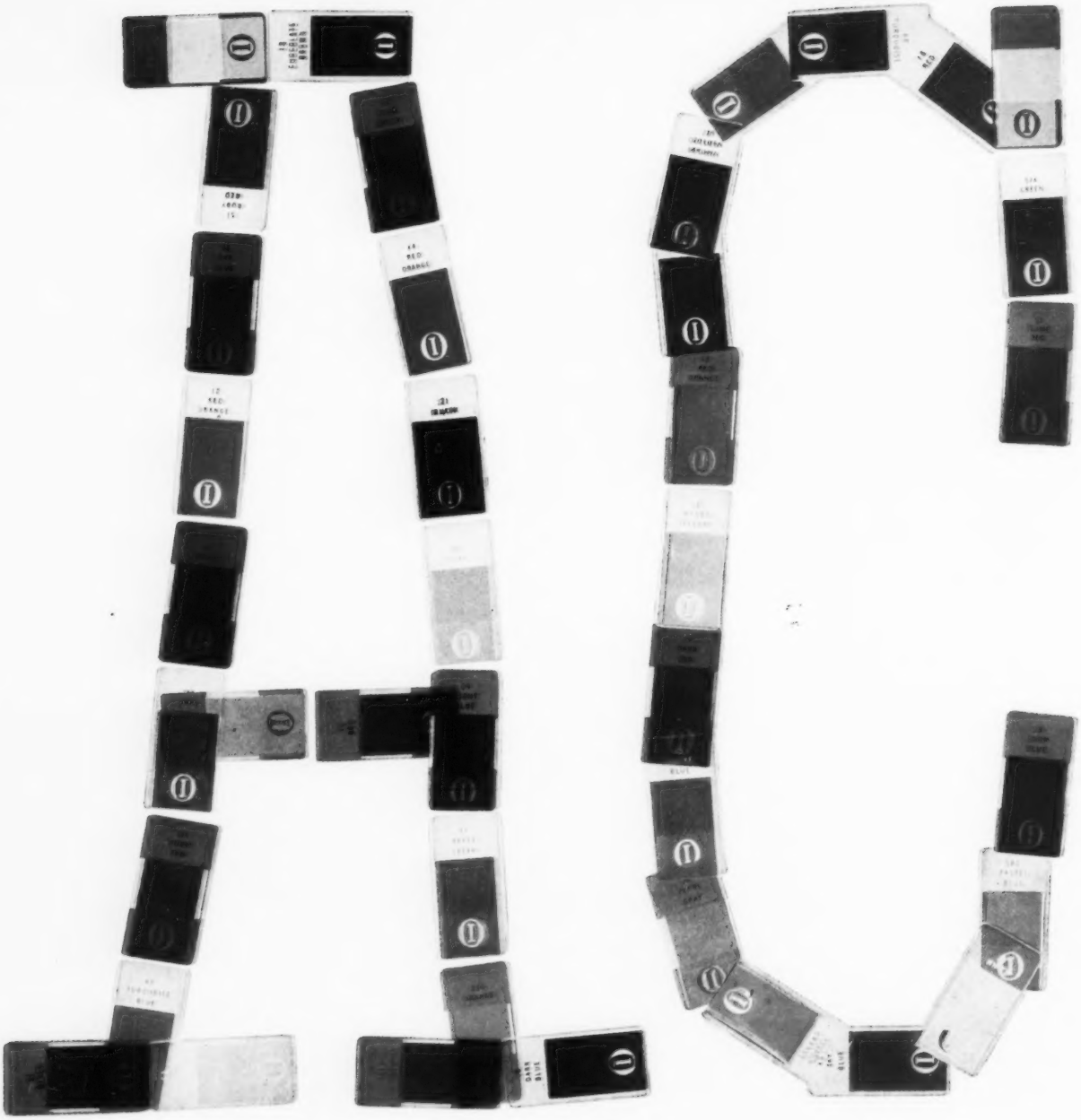
Packaging...

AEROSOLS · LIQUIDS · PASTES · POWDERS

Ninety-one year old New England chemical specialties firm adopts new product and new method of dispensing it. The product: "Dr. Hubbard's Deodorizer," an aerosol room deodorant. The firm? J. Hubbard & Co. Nashua, N. H., maker of "Vegetable Germicide" and "Red Cross Nurse Germicide." Product is packed by Armstrong Laboratories, Boston, in clear, once American can lithographed in three colors.

Automotive Chemicals
Cleaners
Detergents
Deodorants
Disinfectants
Floor Products
Insecticides
Laundry Bleach
Metal Cleaners
Moth Products
Polishes
Shampoos
Shave Products
Soaps
Liquid Starch
Toiletries
and other
Chemical Specialties

A market for over 28 billion packages annually



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Labels that last as long as the glass

Call the Owens-Illinois office nearest you for full information

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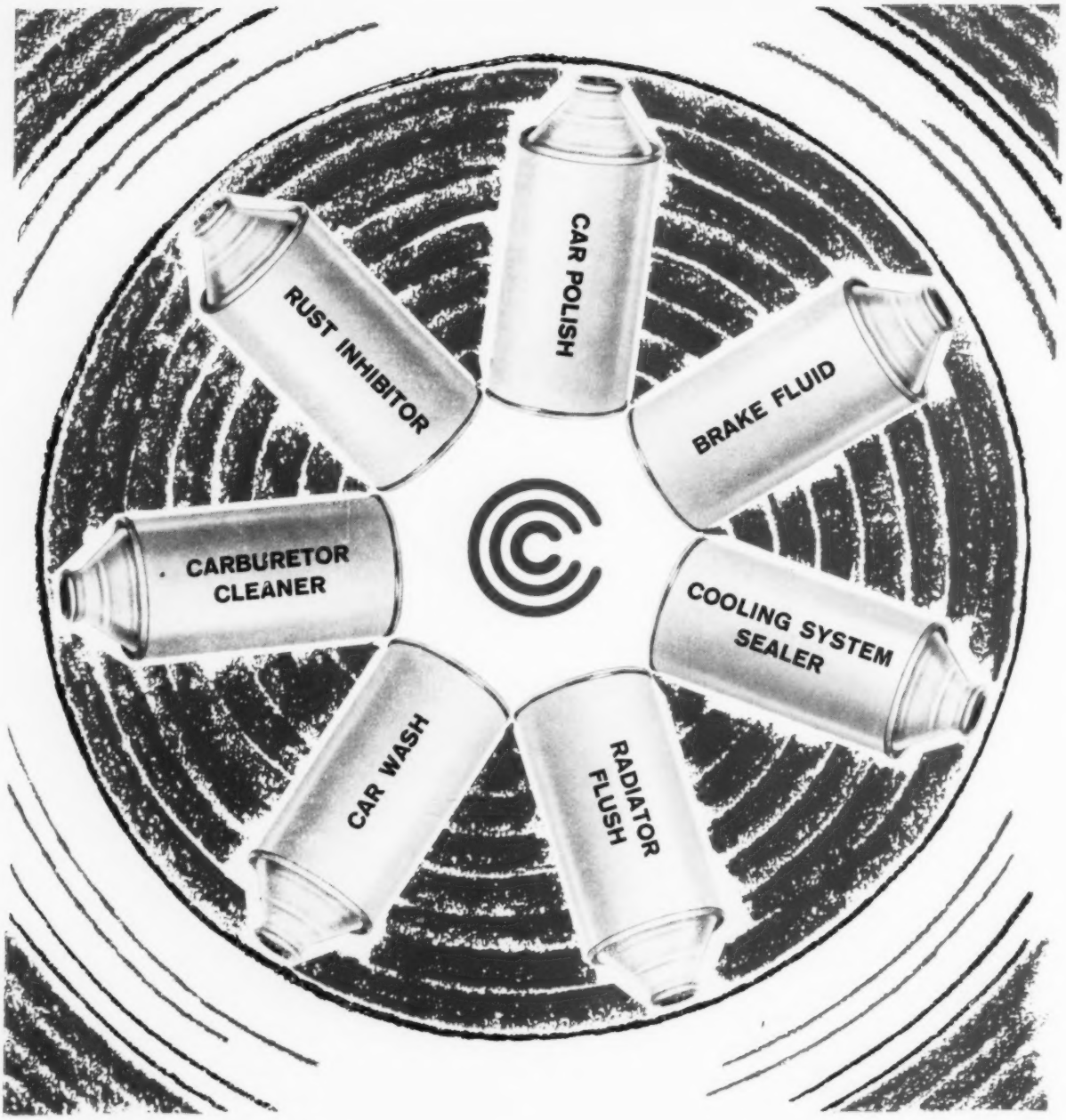
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO
PACIFIC COAST HEADQUARTERS • SAN FRANCISCO



Continental's cone top cans never tire of keeping your additive sales rolling along

Sizes range from 4 oz. to 16 oz.
Choice of closures available for most sizes

Crown Cap
Goldie Seal
Screw Cap
Flip Cap

Here's real prestige packing at a thrift price for your family of automotive products. No package does a better job for your specialties, none is more economical. Sizes range from 4 oz. to 16 oz. And no matter where you operate, you can depend on Continental for on-the-button delivery.
Call Continental today.

CONTINENTAL CAN COMPANY

Eastern Division: 100 East 42nd Street, New York 17
Central Division: 135 South La Salle Street, Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 790 Bay Street, Toronto 1
Cuban Office: Apartado 1709, Havana, Cuba

PACKAGING NOTES

New Plastic Bottle Lines

Continental Can Co., New York, recently announced that it is establishing production facilities for plastic bottles in Los Angeles, Baltimore, and Cincinnati to supplement production from its present Chicago plant. The move follows the creation of a plastic bottle and tube division in January. The new production lines will make custom mold bottles in sizes up through 32-ounces. The Los Angeles line is expected to be in production and serving the west coast this month. Customers in the east and midwest will be served by the Baltimore and Cincinnati facilities starting next month. As well as installing extruding, blowing, finishing and packing equipment at the three new locations, the company is modernizing and expanding plastic bottle production facilities at its Chicago plant.

—★—

New Plax Board Member

Charles A. Thomas, president of Monsanto Chemical Co., St. Louis, was elected recently as a director of Plax Corp., Hartford, Conn., replacing Charles S. Chesston, who retired at the end of last year. A director of Monsanto since 1942 and president since 1951, Mr. Thomas was one of the leading scientists in the development of the atomic bomb and one of the five co-authors of the Acheson-Lilienthal Report, a master plan for the international control of atomic energy.

—★—

New Container Firm

Formation of Rose Container Corp., 23-30 50 Ave., Long Island City, has been announced by Edward Rose, formerly with Fein's Can Corp., Brooklyn. The firm, which went into operation March 15, carries complete warehouse stocks of containers, including seamed and seamless slip cover cans and lined steel pails. Sales encompass the New York-New Jersey metropolitan and the Philadelphia areas. Among principals of the new company are: Atlantic-Vulcan Steel Containers, Inc.; Peabody, Mass.; Vulcan Containers, Inc., Bellwood, Ill.; and Vulcan Steel Container Co., Birmingham, Ala.

—★—

Canco Opens New Plant

Formal opening ceremonies were held last month for the new Atlanta, Ga., plant of the Canco division of American Can Co., New York. The one-story plant has about 150,000 square feet of floor space on a 15-acre site in Forest Park, a suburb of Atlanta. Participating in the ceremonies were William F. May, vice-president and general manager of the Canco division, and Georgia's Governor S. Ernest Vandiver.

—★—

Eaton Manages SCA Plant

Frank D. Eaton has been appointed manager of the Murray Hill, N. J., plant of Strong Cobb Arner Inc., Cleveland. Most recently associated director of laboratories in charge of quality control at Cleveland, Mr. Eaton has been with SCA since 1956. The company plans to expand the Murray Hill plant to make dry drug products in addition to the liquid drug products produced there. SCA is a leading diversified custom manufacturer of drug products.

Frank D. Eaton

—★—

PMMI Show Dates Changed

The dates of the 1961 Packaging Machinery Manufacturers Institute show have been changed to Nov. 7-10. Visitors and exhibitors at the show last November had been told that the 1961 event would be in late October. It will be held in Cobo Hall, Detroit, under the management of Hanson & Shea, Inc., Pittsburgh.

—★—

German Packaging Show

About 390 exhibitors will display a wide range of packaging materials and machinery at Interpack 1960 scheduled for Dusseldorf, West Germany, April 20-27.

The show is double the size of the first exhibition of Interpack in 1958 and includes exhibitors from twelve countries. In conjunction with the show, the International Packaging Congress, FPF, will hold its fourth meeting April 21 and 22.

—★—

Wrap-Ade Names Two Reps

Wrap-Ade Machine Co., Clifton, N.J., manufacturer of unit packaging machines for the chemical, drug, food, and electronic industries, recently appointed two representatives on the west coast. They are: Sumner E. Perkins Co., Berkeley, Calif., and Charles Industrial Sales, Seattle, Wash. Watts King Co. in Los Angeles also represents the company in the west.

—★—

IMCO Advances Two

The appointments of E. M. Davis as vice-president and Frederick L. Kocher as general sales manager for Injection Molding Co., a subsidiary of Rexall Drug and Chemical Co., Los Angeles, were announced recently by William K. Archer, IMCO president.

NEW FROM CANCO...
SNAP-LOCK CAPTIVE CAPS!

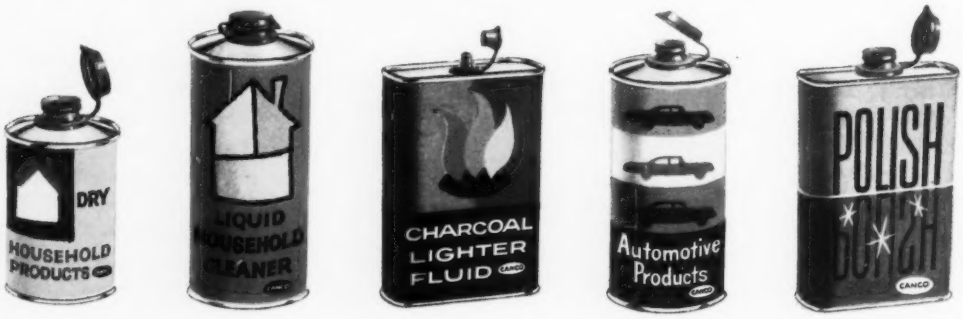
For the first time, a one-piece molded plastic closure for I-style or round metal cans. Cap snaps back, *stays* back as product is poured. Cap snaps down, *stays* down . . . locks as it closes. And because the cap is part of the fitting, it can't get lost.

These new plastic closures provide sales appeal and convenience . . . with economy! They are ideally suited to containers for products such as household cleansers, lighter fluids, polishes, and automotive products. They also give added sales appeal to packages for dry granulated products. Interested? Get the full story on Canco's new snap-lock captive caps from your Canco salesman.

AMERICAN CAN COMPANY

CANCO Division

NEW YORK • CHICAGO
NEW ORLEANS • SAN FRANCISCO



Mr. Davis was formerly director of purchasing for the company which he joined in 1949. He is now concerned with production operations at IMCO's subsidiary plants in the U. S. and Canada. With the firm since 1956, Mr. Kocher served most recently as district sales manager in the Chicago area.

—★—

New Book on Packaging

A new book titled "Industrial Packaging" has been published by John Wiley & Sons, Inc., 440 Park Ave., New York 16. Written by Walter F. Friedman, Dasol Corp., New York, and Jerome J. Kipnees, Atlantic Gummed Paper Corp., Brooklyn, N.Y., the book of 536 pages sells for $11.50. Three phases of packaging are covered in the book: scope of industrial packaging; material and containers; and methods and equipment.

—★—

James Nash Dies

James H. Nash, 67, founder and former president of Jim Nash Associates, Inc., New York, design firm, died March 3rd at his winter home in St. Thomas, Virgin Islands. A resident of Bucks county, Pa., Mr. Nash was a package designer by profession. In 1932, he won this country's oldest award for package design, the Irwin D. Wolf trophy of the Package Designers Council for his design of the DuPont anti-freeze package.

—★—

New Continental Distrib.

Nel-Kan Corp., 133 Logan Ave., Jersey City 6, N. J., was appointed a distributor and factory representative last month for Continental Can Co., New York. Nel-Kan handles the company's steel container and general line cans in the metropolitan New York and New Jersey area.

—★—

New Packaging Machinery

Stainless & Steel Products Co., St. Paul, Minn., recently formed a new division called Thiele Packaging Machinery Co., 1000 Berry St., St. Paul 14. The new division manufactures and sells automatic and semi - automatic packaging machines developed by Thiele Engineering Co., Hopkins, Minn. Initially the new division is producing seven standard machines including automatic case packers, carton set-up machines, a coupon placing machine, and a case loading machine. The complete line is described in a six-page folder available from the division.

—★—

Continental Realignment

A realignment of assistant sales managers in the metal division of Continental Can Co., New York, was announced recently by R. S. Hatfield, division general manager of sales.

J. W. Leaycraft, formerly assistant products sales manager in the processed food and milk can group, has joined the industrial and household products can group covering metal containers for liquid detergents, waxes and polishes, household deodorants, paint and varnish, and grease.

P. N. Smith, with the same position in this group, is responsible for containers for aerosol products, anti-freeze, and other automotive products.

New Peerless Catalog

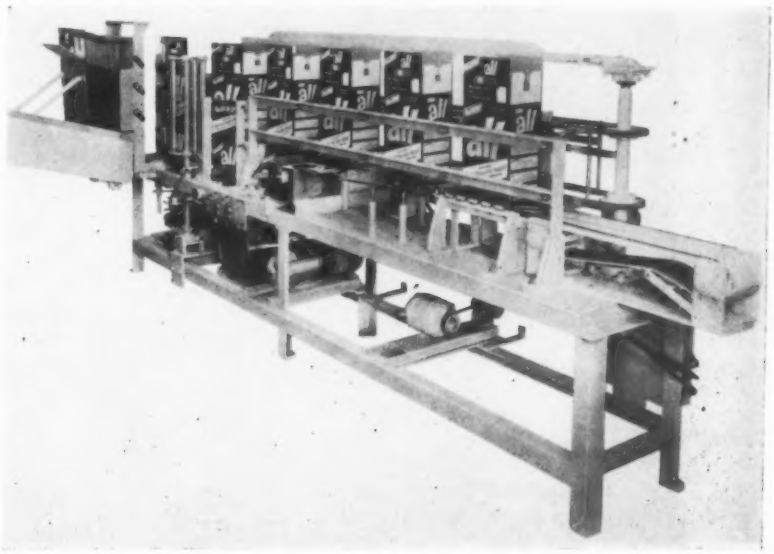
An eight-page folder was recently published by Peerless Tube Co., Bloomfield, N. J., describing its line of "Peerasol" aluminum aerosol containers of extruded, one-piece, seamless construction. The containers are used in the packaging of chemical specialties, cosmetics, drugs, and pharmaceuticals. The "Peerasol" line comes in 10 sizes and ranges in capacities from one-half to four ounces. Inside resin coatings and exterior finishes available also are described in the folder.

—★—

New Aerosol Can

A new soldered aerosol container called the "Tricom," said to have greater side seam bond stability, was recently introduced by Continental Can Co., New York. The container is reported to hold higher pressures at elevated storage temperatures for longer periods than the conventional soldered three-piece can now in use. Continental has increased the conventional soldering system from two components to three thus eliminating limited selection of propellant mixtures to those which can be tolerated by the can structure.

New set-up and closing machine from Thiele Packaging Machinery Co., St. Paul, Minn., handles cartons as large as 12 inches wide by eight inches deep by 20 inches high, automatically. Using three cams, the continuous motion machine features 180 degree reversing of the carton and ironing of score lines said to provide fully squared carton before gluing. Other features reported are welded square steel tubing frame, fully enclosed motors, and water-tight wiring.



THE BEST REASON TO TRUST PRECISION WITH YOUR PRODUCT

*100 BILLION SUCCESSES WITH THIS VALVE

PERFORMANCE-PROVEN ON EVERY TYPE OF PRESSURIZED PRODUCT

On October 18, 1959 at 10:25 in the morning, Precision Valve Corporation produced its one billionth aerosol valve. Ten years of research, study and experience went into its creation and in those same ten years, the aerosol package came of age.

Today, almost any product that can be poured or powdered can be dispensed in an aerosol . . . always dispensed with greater ease and more convenience, usually at less cost.

Precision Valve Corporation's Research Department will be happy to help you build a better package for your product with the valve of proven quality.

PRECISION VALVE CORPORATION

700 NEPPERHAN AVE., YONKERS, N. Y. • ZURICH

** Calculated on the basis of about 100 actuations per aerosol . . . from the 56 uses of an air sanitizer through the 198 times actuated tooth paste container, not including foreign production.*

And still another new heavy duty liquid laundry detergent is just being introduced by Procter & Gamble Co., Cincinnati. This time it's "Gain" concentrated laundry detergent. Packaging for this new P&G product is an easy-grip, non-slip polyethylene plastic bottle which is supplied by Plax Corp., Hartford, Conn. Sizes: 12, 22 and 32 ounces.

"Swish Elektrokleen," a chemical solvent for cleaning electric motors and parts on which oil, grease, dirt and dust has accumulated, is now available in a pressure package. Made and distributed by Montgomery Chemical Co., Jenkintown, Pa., "Swish" is packed by Thomasson Co., Norristown, Pa., in 16 ounce American cans.

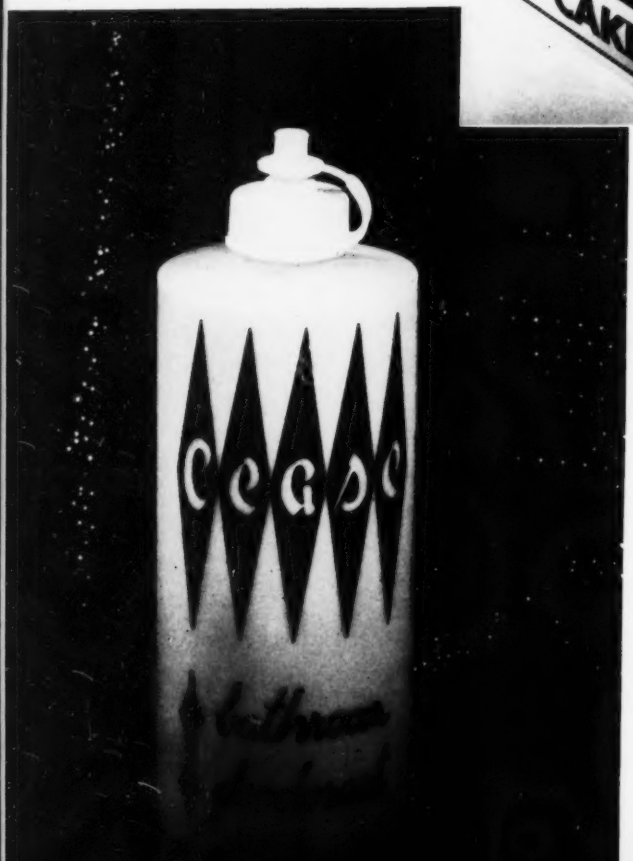
What's New?

Now being marketed in the Dakotas, Minnesota and western Wisconsin is "Hum" a liquid laundry detergent designed to meet the special needs of synthetic and so-called wash and wear fabrics. Made by Lever Brothers Co., New York, and not to be confused with an earlier product of the same name, "Hum" is an aqua-blue liquid. It is packaged in high density polyethylene plastic bottles in pint and quart sizes. Bottles supplied by Owens-Illinois Glass Co. Product retails for 41 and 74 cents, respectively, for pint and quart sizes.

Novel, "stand-on cap" polyethylene tubes have been adopted for packaging of "Vita Fluff" professional shampoo made by Duon, Inc., Coral Gables, Fla. Tubes are printed in gold and "lipstick" red with black outline lettering. An elliptical gold foil label identifies each of the seven types of shampoo and an oversize flush cap, molded of red styrene, matches red lettering on tube body. Tubes are supplied by Bradley-Sun Division of American Can Co., Hillside, N. J. New squeeze packages are unbreakable, easy to store, and convenient for one hand application by beauty operator.

Mennen Co., Morristown, N. J., recently introduced a new aerated shave cream, "Sof' Stroke." Said to be a heavy bodied aerated shave cream, the new pressure packaged product replaces Mennen "Foam Shave Regular." "Sof' Stroke" is available in two sizes: 6¼ ounces for 79 cents, and 11 ounces for 98 cents. Package design by Francis Blod, Design Associates, Ltd. of New York, is entirely new, and is a complete departure from established Mennen format. Mennen does its own loading. Cans are by Continental, and valves by Oil Equipment Laboratories, Elizabeth, N. J.

New fly control product, "Fly Cake," was announced recently by Alco Chemical Co., Artesia, Calif. The new bait type pesticide contains DDVP for its insecticidal properties. Ten cakes, in the shape of small doughnuts, are packaged in a carton, or single units mounted on counter display cards are available.



"Cease," a new liquid deodorant, was announced recently by Cease Industrial Sales, Inglewood, Calif. Packaged in 12-ounce, refillable polyethylene bottles and one gallon glass containers, product is designed for deodorizing garbage pails, diaper pails, etc.

New package has been adopted for "Lanolin Creme Shampoo" of Helene Curtis, Chicago. Shampoo in new, 10-ounce white jar with red, white and blue cap, is being offered at new, reduced retail price of $1.39. "Lanolin Creme Shampoo" formerly retailed for $1.89.

Purse size pressure dispensing unit (center) has been adopted by Houbigant, Inc., New York, for its "Chantilly" eau de toilette. Two other new packages adopted for Mother's Day and early summer selling are two and four ounce spray flacons, each of which comes with gift atomizer. Latter two retail for $3.25 and $4.75, plus tax. Two ounce spray mist unit retails for $2.50 plus tax. VCA supplies mechanical break-up valve with plastic activator. Container by Peerless Tube Co.

New, pressure packaged 2,4-D weed killer trade named, "Target," was introduced recently by DeMert & Dougherty, Inc., Chicago, to retail for 98 cents. Product is loaded in 16 ounce cans, 12 of which are packed to the case.

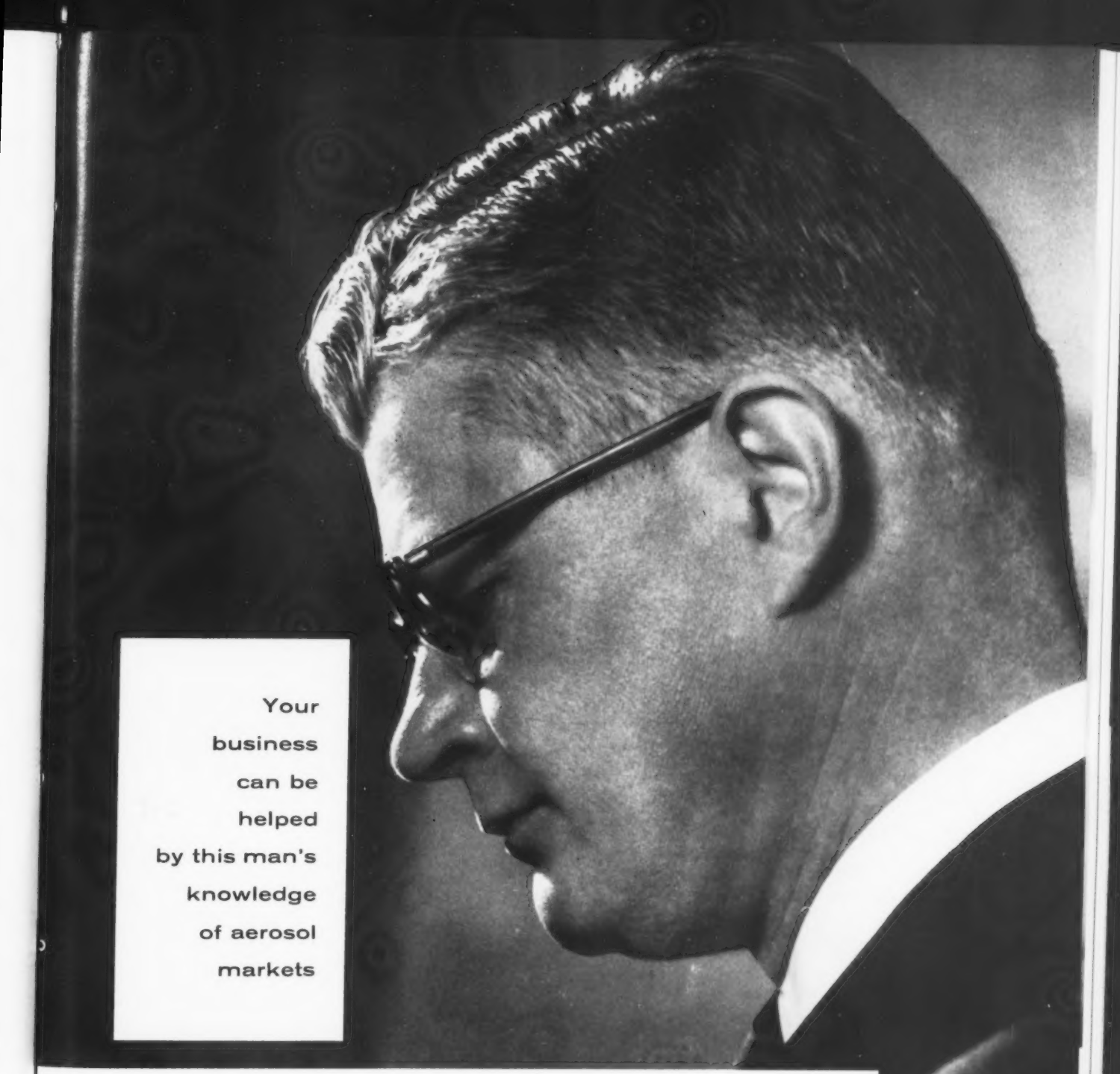
New "Yellow Label Kil" insecticide is designed exclusively for mosquito control. Made by Kil, Inc., Pennington, N. J., the new residual type pesticide contains DDT, pyrethrins and piperonyl butoxide, as well as glycol as a humectant.

Every part except the dip tube is engineered and produced right in the completely equipped Schrader plant. Exceptionally easy toggle action is a typical result of Schrader's leadership in the engineering of quality pressure-handling apparatus. Schrader will design valves to dispense your product most efficiently. We will be pleased to help you from initial product analysis through mass production of the valves that actually will build customer acceptance for your product.

Schrader®
a division of SCOVILL

Aerosol Valves

A. SCHRADER'S SON, *Division of Scovill Manufacturing Company, Inc.*, 470 Vanderbilt Avenue, Brooklyn 38, N. Y.



He is Du Pont's Ralph Crane . . . and his job is Market Research Manager of their "Freon" Products Division. From the industry's most comprehensive background of market research, his knowledge is available to help you locate marketing opportunities for your aerosol products.

Since 1947, the "Freon" Products Division has made 23 national surveys for the aerosol industry. These surveys include 17 studies of consumer knowledge, use and opinion and 6 studies of dealer practices and opinion of aerosol products. This continually growing fund of information is available to help you plan your aerosol marketing efforts.

The results of Ralph Crane's work are just one of many services available to users of Freon* propellents. The Du Pont service team includes experts in every area of aerosol planning, production and marketing. For more information call your Du Pont representative or write E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, 2420N-354 Wilmington 98, Del.

FREON®
PROPELLENTS

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

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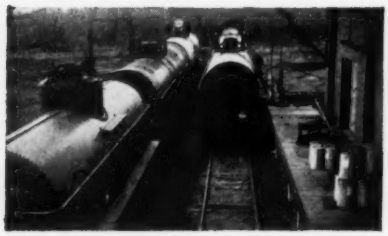
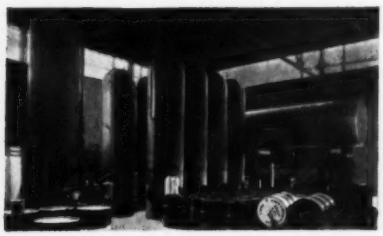
...and then some!

50,000 square feet, as a matter of fact, in which to meet your liquid or aerosol filling requirements. Besides ample facilities for handling your bulk ingredients, we have extensive warehousing space for the storage of your products after packaging. When shipments are to be made, our personnel and equipment are ready to move large or small orders in a hurry... and of course, we're always glad to handle drop shipping. Direct railroad sidings and truck service at our door permits our plant to serve as your warehouse... a central distributing point... saving you time... and money.





For details about our complete services in contract filling (liquid or aerosol), write, 'phone or wire...

PETERSON
Filling and Packaging Co.
HEGELER LANE • DANVILLE, ILLINOIS

Today's loveliest container . . .

*a seamless Peerasol**

Women love this compact, lightweight aerosol. Fashioned in one piece from gleaming aluminum, Peerasol containers can be handsomely decorated in two, three or four colors over a base coat. Precise valve-cup fit is obtained by a patented process in manufacture. This means leak-proof containers, higher pressures and a high standard of quality control.

Peerasol is the smart container for perfumes, colognes, drug or pharmaceutical products. Write or call for complete information.

*PEERASOL is a tradename of the Peerless Tube Company for this one-piece, seamless aerosol with the patented lip for tight valve-cup fit.

PEERLESS TUBE COMPANY, Bloomfield, New Jersey

MOVE IT

WITH WRAPAK

Distributors handling products packaged in CCA's new Wrapak® cartons save time in handling, price-marking—time and material in reshipment of less-than-case lots to retail customers. They also appreciate Wrapak's versatility in handling multiple units of cans, cartons, bottles. To **pack it—move it—sell it** is the business of CCA packaging.

CCA

CONTAINER CORPORATION OF AMERICA

Chicago 3...and all key marketing areas. Folding Cartons, Shipping Containers, Sefton Fibre Cans, Molded Plastic Products

NEW Trade Marks

THE following trade marks were published in recent issues of the *Official Gazette* of the U. S. Patent Office in compliance with section 12 (a) of the Trade Mark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. See rules 20.1 to 20.5. As provided by section 31 of the Act, a fee of $25 must accompany each notice of opposition.

Wit—This for water soluble pellets for glass cleaner, road film remover, automatic windshield washing solution, and heavy duty cleaner and degreaser liquids. Filed Aug. 3, 1959 by Pixie Chemical Corp., San Jose, Calif. Claims use since February 1959.

Sapphire—This for wax composition for cleaning and polishing automobile bodies or the like. Filed Apr. 2, 1959 by Collinite Chemical Co., Utica, N.Y. Claims use since Apr. 8, 1954.

Wax-O-Lene—This for furniture and automobile polish. Filed Sept. 3, 1959 by Oil Specialties & Refining Co., Brooklyn, N.Y. Claims use since July 20, 1935.

Army & Navy—This for metal polishes. Filed Sept. 3, 1959 by Oil Specialties & Refining Co., Brooklyn, N.Y. Claims use prior to 1897.

Spur-Tex — This for janitors' supplies, namely soaps and synthetic detergents. Filed Nov. 24, 1958 by Spurrier Paper Co., doing business as Spurriers, Wichita, Kans. Claims use since on or about November 1950.

Navee '42—This for liquid degreaser and carbon remover for marine, aircraft, and industrial uses. Filed Dec. 24, 1958 by Penetone Co., Tenafly, N.J. Claims use since Dec. 31, 1942.

Shina Dish—This for soapless detergents for household use. Filed Jan. 19, 1959 by Rapp-Ramsey Co., Shenandoah, Ia. Claims use since Aug. 23, 1948.

Nabsoil—This for absorbent in the form of granular material to absorb liquids and greases. Filed May 13, 1959 by Diversey Corp., Chicago. Claims use since Nov. 26, 1958.

Sss-T!—This for rust remover, coffee pot cleaner, and cleaner for plastic dishes. Filed July 23, 1959 by Fast Chemical Products Corp., Yonkers, N.Y. Claims use since July 1, 1959.

Nifda—This for liquid detergent compound. Filed Aug. 4, 1959 by National Institutional Food Distributors Association, Inc., doing business as National Institutional Food Distributor Associates, Inc., Atlanta. Claims use since March 1959.

Kutol—This for hand soaps. Filed Aug. 10, 1959 by Kutol Products Co., Cincinnati. Claims use since 1926.

Alkol—This for chemical cleaning compounds and paint removers for industrial use. Filed Aug. 17, 1959 by Sherwood and Co., Kansas City, Mo. Claims use since during February 1959.

Liqui-Therm—This for liquid synthetic detergent for use in all types of steam cleaners. Filed Aug. 31, 1959 by Fischer Industries, Inc., Cincinnati, O. Claims use since Aug. 30, 1955.

Tectona — This for wax and tung oil for finishing and polishing floors and woodwork. Filed July 23, 1959 by Bangkok Industries, Inc., Philadelphia. Claims use since Sept. 15, 1958.

Miraco — This for detergents and soaps in bead or flake form, primarily for home use. Filed Jan. 29, 1959 by Wink Soap Co., Racine, Wis. Claims use since 1930.

Take — This for detergent and soap cleansing products. Filed Aug. 12, 1959 by Korgedt Chemical Products, Inc., Chicago. Claims use since May 1959.

Mr. Clear — This for sudsing cleaner, cleanser, and detergent. Filed Aug. 17, 1959 by Procter & Gamble Co., Cincinnati. Claims use since May 1, 1956.

Vibratron — This for liquid chemical cleaning compound for cleaning metallic articles. Filed Aug. 20, 1959 by Turco Products, Inc., Wilmington, Calif. Claims use since June 4, 1959.

Fan — This for waterless hand cleaner. Filed Aug. 28, 1959 by East Coast Soap Corp., Brooklyn, N. Y. Claims use since July 1, 1958.

Wolfco — This for scouring and detergent compositions particularly for use in the textile industry. Filed Aug. 28, 1959 by Jacques Wolf & Co., Newark, N. J.

Easy-Off—This for oven cleaner. Filed Sept. 2, 1959 by American Home Products Corp., doing business as Boyle-Midway, New York. Claims use since July 1, 1950.

Associated A F S — This for household detergent in powder form and liquid form. Filed Oct. 19, 1959 by Associated Food Stores, Inc., Jamaica, N. Y. Claims use since 1955.

Preenet — This for cleaning and polishing waxes. Filed Mar. 6, 1959 by A. S. Harrison Co., South Norwalk, Conn. Claims use since Feb. 2, 1951.

Luster Burr — This for chemical preparation for cleaning, brightening, and polishing metals. Filed July 15, 1959 by Alchemize Corp., Chicago. Claims use since Nov. 1, 1958.

Sure-Pine — This for pine oil disinfectant and deodorant. Filed Nov. 5, 1958 by Joseph F. Uddo, doing business as F. Uddo & Sons Co., New Orleans, La. Claims use since Oct. 30, 1942.

Miraco — This for detergents and soaps in liquid form for domestic use. Filed Jan. 29, 1959 by Wink Soap Co., Racine, Wis. Claims use since Jan. 2, 1958.

Lucky — This for all purpose detergent. Filed July 14, 1959 by Lucky Stores, Inc., San Leandro, Calif. Claims use since Apr. 13, 1959.

Fast — This for all-purpose household cleaner. Filed Sept. 8, 1959 by Rapp-Ramsey Co., Shenandoah, Ia. Claims use since Apr. 8, 1958 and Sept. 14, 1953 as to a detergent for use in washing machines.

Foton — This for detergents for cleaning floors and walls. Filed Sept. 10, 1959 by U. S. Sanitary Specialties Corp., Chicago. Claims use since Aug. 5, 1959.

Kaf-Tan — This for cleansers for coffee pots and similar articles. Filed Sept. 16, 1959 by Imperial Process Co., Springfield, Ill. Claims use since May 11, 1959.

Bakespar—This for floor finish. Filed June 15, 1959 by Brulin & Co., Indianapolis, Ind. Claims use since July 31, 1939.

D-Pen — This for cleaner and polisher for glass, metal, woodwork, linoleum, painted walls and the like. Filed June 30, 1959 by Henry A. Nygren, Hobson, Mont. Claims use since Nov. 1, 1958.

Blue Ribbon — This for antifreeze solution. Filed Nov. 17, 1958 by True's Oil Co., Spokane, Wash. Claims use since Sept. 8, 1958.

Zolls Concentrate — This for liquid cleaner for rugs, upholstering, linoleum, glassware, dishes, woodwork, and the like. Filed June 10, 1957 by Western Carpet Cleaning Co., doing business as Zoll's Chemical Co., Detroit. Claims use since June 1, 1954.

My Sin — This for soap. Filed Sept. 9, 1958 by Lanvin-Parfums, Inc., New York. Claims use since October 1957.

Knight's Spray Nine—This for cleaner for surfaces of vinyl, rubber, plastic, porcelain, paint, chrome, enamel, glass, and the like. Filed Dec. 22, 1958 by Knight Oil Corp., Gloversville, N. Y. Claims use since Oct. 24, 1958.

Swirl Away — This for liquid detergent. Filed Jan. 28, 1959 by Jewel Tea Co., Melrose Park, Ill. Claims use since Dec. 22, 1958.

Sanimation — This for liquid detergent for general cleaning purposes. Filed Aug. 10, 1959 by Chicago Sanitary Products Co., Chicago. Claims use since Feb. 17, 1959.

Formax — This for automobile polishes, waxes, and rubbing compounds, polishing and buffing compositions, and buffing wheels and polishing wheels. Filed Oct. 29, 1959 by Formax Manufacturing Corp., Detroit. Claims use since March 1939.

Malacoat — This for insecticide. Filed July 22, 1959 by M. F. A. Oil Co., Columbia, Mo. Claims use since Apr. 9, 1959.

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Aerosol Insecticides for Aircraft

By J. H. Fales, R. A. Fulton, and O. F. Bodenstein

Entomology Research Division
Agricultural Research Service
U. S. Department of Agriculture
Beltsville, Md.

A GRADUAL change from expensive heavy steel aerosol containers for aircraft disinsectization to a cheaper, nonrigid but safe type has taken place. Effective liquefied gas aerosol formulations have been developed for use in these less costly units.

Two high-pressure (approximately 70 p.s.i. gage) liquefied gas aerosols, G-382 and G-651, have been commonly used for aircraft disinsectization. The former contains 5% pyrethrum extract (20%), 3% DDT, 5% cyclohexanone, 2% lubricating oil (SAE 30), and 85% propellant 12. The latter contains 6% pyrethrum extract (20%), 2% DDT, 8% methylated naphthalenes, and 84% propellant 12. Modifications of these formulas have been developed that reduce the pressure to 55 p.s.i. gage without changing active ingredients or effectiveness. They are now commonly applied to aircraft from lightweight 2P containers (Interstate Commerce Commission Regulations. 1957. Sect. 73.306.) This paper reports the development of these medium-pressure formulations and the method used for their biological evaluation.

Some of the earlier work on high-pressure formulas for use on aircraft was presented by Fales *et al.* (1951a, b). A number of other workers have described efforts to develop more effective formulas and biological methods of evaluation, both in this country and abroad (Anonymous 1953, Bruce-Chwatt & Coi 1950, Busvine 1952, Busvine & Tew 1950, Crowell *et al.* 1952, David & Tew 1949, Goodwin-Bailey *et al.* 1957, McBride *et al.* 1950, Resnick & Crowell 1951, Tew *et al.* 1951). The tests reported by these workers included the use of free-flying and caged insects in various-sized testing rooms as well as in aircraft on the ground and in flight.

The insects used in the present work were the house fly (*Musca domestica* L.), the yellow-fever mosquito (*Aedes aegypti* (L.)), the common malaria mosquito (*Anopheles quadrimaculatus* Say), the northern house mosquito (*Culex pipiens* L.) the Japanese beetle (*Popillia japonica* Newm.), the American cockroach (*Periplaneta americana* (L.)), and the lesser mealworm (*Alphitobius diaperinus* (Panz.)). The insects were laboratory-reared except the Japanese beetles, which were field-collected. Most of the tests were made in a Peet-Grady chamber, although some of the mosquito tests were made in railroad boxcars.

Before biological studies were made, various ratios of propellants 11 and 12 were studied to obtain a mixture with a gage pressure under 55 p.s.i. and with no crazing effect on plastic sheets of the type used for windows and instrument panel coverings in aircraft. A ratio of 30% propellant 11 and 70% propellant 12 had no deleterious effect on "Plexiglas" (Rohm & Haas Co.) and "Lucite" (E. I. du Pont de Nemours & Co.) (clear methacrylate test strips).

(*Turn to Page* 140)

Table 1. Effectiveness against house flies of medium-pressure (55 p.s.i. gage) aerosols with different particle-size distribution.

(All aerosols contained 6% pyrethrum extract (20%), 2% DDT, 8% solvent, 84% propellants 11 and 12.)

Formula			Particle Diameter (Microns)		Dosage	Percent knockdown in—			Percent
Number	Solvent ("Velsicol")	Propellant	Mass Median	Largest	(G./1000 Cu. Ft.)	5 Minutes	10 Minutes	15 Minutes	kill in 1 day
			Swinging-shutter method (3 tests)						
G-1025	AR-50	11 and 12 (3:7)	6	22	0.37	2	8	14	13
G-1026	50	11 and 12 (2:8)	6	24	.36	3	9	15	8
G-651[a]	60	12	14	40	.36	2	8	12	38
			Sprayed directly from container (4 tests)						
G-1025	AR-50	11 and 12 (3:7)	6	22	2.41	27	47	59	75
G-1028	50 and 60 (1:1)	do.	12	35	2.50	35	61	68	82
G-1029	50 and 60 (1:3)	do.	14	35	2.41	34	58	68	87
G-1030	60	do.	40	90	2.82	38	53	62	76

[a]High-pressure aerosol.

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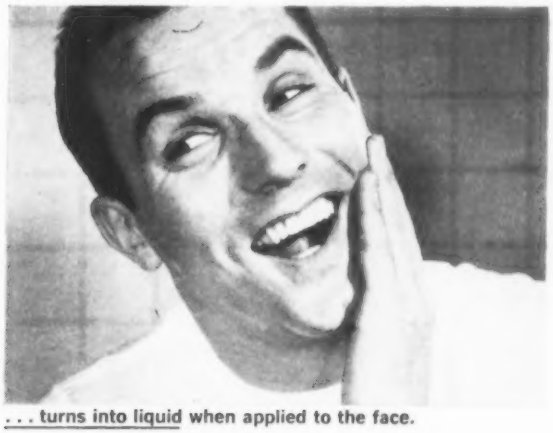

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(*From Page* 137)

A physical and biological study was made of the particle size range obtained by modifying formula G-651 to give different pressures and viscosities. "Velsicol" (Velsicol Chemical Corp.) AR-50 or "Sovacide" (Socony Mobil Oil Co.) 544-C, which are lower boiling hydrocarbon fractions than "Velsicol" AR-60 or "Sovacide" 544-G, have been used satisfactorily for more than 10 years in typical commercial aerosols having pressures under 40 p.s.i. at 70° F. When they were used with propellant mixtures having greater pressures, some of the higher boiling fraction had to be added to obtain aerosol particles with mass median diameters within the range of from 12-14 microns.

The particle-size data and results of tests against house flies are given in Table 1. In the first series of tests, made by the swinging-shutter method (McGovran *et al.* 1947), "Velsicol" AR-50 caused a reduction in particle size of the aerosol and a lowered kill of house flies. In tests with formulas containing either "Velsicol" AR-50 (G-1025) or AR-60 (G-1030) and with the two solvents used together (G-1028 and G-1029), the combined solvents gave the desired particle size and G-1029, which contains 2% "Velsicol" AR-50 plus 6% "Velsicol" AR-60, was the best. These tests were made by the Chemical Specialties Manufacturers Association Aerosol Test Method for Flying Insects (1955), in which the aerosol is sprayed directly into the chamber. However, the standard dosage was reduced. The formulas containing the mixed solvents caused higher mortalities than those containing the single solvents.

Comparative Tests

G-1029 appeared to be a promising new formula. To determine whether it was as effective as the similar G-651 high-pressure formula, it was tested against both yellow-fever and malaria mosquitoes at five grams per 1000 cubic feet and also against these mosquitoes and house flies at the reduced laboratory test dosage of about 2.5 grams per 1000 cu. ft. Exposures of 15 minutes were used. There was high knockdown and at least 94% kill of all mosquitoes and 91 to 94% kill of house flies at the lower dosage.

The other high-pressure aircraft aerosol, G-382, was also modified by reducing the pressure to 55 p.s.i. at 70° F. by using the same propellant mixture as in G-1029. The solvents used in G-382 were unchanged. This modified formula is G-1152. The mass median particle diameter with this formula was 14 microns and the largest particle was 27 microns. This was the same as G-382 except for the diameter of the largest particle, which was 45 microns for the latter. The two modified formulas were compared with G-651 and G-382 at the reduced dosage and an exposure of 10 minutes for the house flies and five minutes for the mosquitoes. The results given in Table 2 show that the medium-pressure formulas compared favorably with the high-pressure types and performed even better in the

(*Turn to Page* 185)

Table 2. Comparison of effectiveness against house flies and mosquitoes of medium- and high-pressure aerosols with reduced dosage and exposure time. (10 tests)

Formula	Dosage (G./1000 Cu. Ft.)	Percent Knockdown in— 5 Minutes	10 Minutes	Percent Kill in 1 Day	
		House Fly			
G-1029	2.82	54	76	90	
G-651	2.49	44	72	90	
G-1152	2.68	39	67	94	
G-382	2.63	28	62	92	
		Common Malaria Mosquito			
				Male	**Female**
G-1029	2.66	81	—	99	88
G-651	2.43	80	—	99	84
G-1152[a]	2.57	60	—	99	96
G-382[a]	2.45	60	—	100	99

[a]Three tests.

Table 3. Comparison of effectiveness against Japanese beetles, adult female American cockroaches, northern house mosquitoes, and lesser mealworms of medium- and high-pressure aerosols. Exposure 10 minutes except cockroaches 30 minutes.

Formula	(G./1000 Cu. Ft.)	Percent Knockdown in 10 Minutes	Percent Kill in— 1 Day	2 Days	3 Days	5 Days
		Japanese Beetle (3 tests)				
G-1029	23.75	84	—	72	—	—
G-651	24.16	95	—	88	—	—
G-1152	24.40	77	—	82	—	—
G-382	22.08	92	—	92	—	—
		American Cockroach (3 tests)				
G-1029	33.50	87	2	—	88	95
G-651	31.90	88	2	—	85	95
G-1152	33.30	95	0	—	88	97
G-382	33.90	88	0	—	87	90
		Northern House Mosquito (2 tests)				
G-1029	5.96	90	—	—	—	—
G-651	7.10	94	—	—	—	—
G-1152	5.82	84	—	—	—	—
G-382	6.00	80	—	—	—	—
		Lesser Mealworm (4 tests)				
G-1029	41.79	100	2	6	8	52
G-1152	41.09	98	0	7	19	54

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PRESSURE PACKAGING

Le Fevre Names Roark

Le Fevre Chemical Co., Oklahoma City, announced late last month the appointment of

John F. Roark

John F. Roark as national sales manager. Mr. Roark has previously held sales, merchandising, and marketing positions with Diamond Alkali Co., Reynolds Metal Co., and Wyandotte Chemicals Corp. Le Fevre makes and markets pressure packaged industrial deodorants and is currently engaged in developing other specialties.

—★—

New Aerosol Filling Line

An automatic, high-speed aerosol filling line built by Kartridg Pak Co., Franklin Park, Ill., was installed recently by Minnesota Paints, Inc., Minneapolis, paint and varnish manufacturer. The 90-year-old paint firm sold its first aerosol package two and a half years ago and its new completely integrated line is believed to be the first aerosol paint filling line in the northwest. For their first 18 months in the aerosol business, Minnesota Paints used a custom aerosol packer and then bought manually operated, laboratory type, aerosol equipment, continuing to use the packer for long runs. With the new equipment, the company is reported to be able to do all of its own packaging and handle the aerosol requirements of its plants in Atlanta, Ga., Fort Wayne, Ind., and Dallas, Tex.

The new line is a Kartridg Pak 800 series straight line consisting of an electromatic filler, purging units, a crimper, a pressure filler, a pressure tester, and water bath.

—★—

VCA Acquires Patents

Philip H. Sagarin, president of VCA, Inc., Bridgeport, Conn., valve manufacturer, announced last month that his firm had purchased all of the patents held by Lawrence Ward relating to metered aerosol valves. Included are the following U. S. patents and patents applied for: Nos. 2,812,884; 2,788,925; 2,856,105; 2,856,235; and applications No. 405,175 and 804,856. Canadian patent application 769,648 was also acquired by VCA.

—★—

Mina Joins Drug Firm

Francis A. Mina last month joined the research staff of Reed & Carnrick, Kenilworth, N. J., pharmaceutical firm. Most recently technical director for Lodes Aerosol Consultants, Inc., New York,

Francis A. Mina

Dr. Mina now is concerned with clinical research. Before he joined Lodes in 1957, Dr. Mina was technical director for Chemway Corp., Wayne, N. J., where he was responsible for the development of "Lar-'vex," a moth spray packaged in a glass aerosol container with an outer metal case. Well known in the aerosol field, Dr. Mina was guest speaker at the aerosol clinics sponsored by the Aerosol Division of the Chemical Specialties Manufacturers Association last fall. He has done research in bacteriology and pharmacology and has published a number of articles on aerosols.

—★—

Newsletter on Aerosols

John C. Stalfort & Sons, Baltimore, Md., last month published the first of a series of monthly newsletters about aerosols. Called "The Aerosol Marketer's

Charles Mellick was appointed recently as vice-president in charge of aerosol operations for Hysan Products Corp., Chicago. Previously, for four years he had been with Gene Rose Co., Chicago contract aerosol loader, as technical director. Prior to this he had been with Hysan for two years as chief chemist. Before he joined Hysan originally, Mr. Mellick was for seven years associate research leader in charge of corrosion research problems for Dearborn Chemical Co., Chicago. His earlier experience includes eight years with Edwal Laboratories, now known as Morton Chemical Co., Chicago.

Hysan, founded in 1926, is known primarily as a manufacturer of chemical specialties, including automotive specialties. The firm also does processing, filling and compounding. Hysan has six filling lines, including two pressure-fill aerosol lines.

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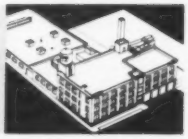

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—★—

Honored for Aerosol Work

Harvey Mintzer, a research chemist for Aerosol Techniques, Inc., Bridgeport, Conn., was elected recently to Sigma Xi, national honorary research society, on the basis of work he did with Robert Cohn on aerosol particle size measurement. Mr. Cohn also was elected to the society. The work was done when the two men were graduate students in the aerosol laboratory endowed by Aerosol Techniques at the College of Pharmacy, Columbia University, New York. Their research was directed by Joseph Kanig of the College faculty.

—★—

Impact Named Distributor

Impact Container Corp., 135 Oakland Pl., Buffalo 22, N.Y., was appointed exclusive distributor in North America last month for seamless impact extruded aluminum aerosol containers made by Bombrini Parodi-Delfino, Rome, Italy. The containers are available in a range of capacities from three to 37 fluid ounces. They feature a reinforced curled lip opening for sealing with standard one inch aerosol valves. American licensee for the manufacture of the containers is Aluminum International, Inc., Denver, Colo.

—★—

Aerosol Publicity Results

An eight-page fold-out was recently issued by the Aerosol Division of the Chemical Specialties Manufacturers Association illustrating recent consumer and trade publicity results of the division's aerosol market development and publicity program. The folder shows the many areas and types of media covered and the techniques used in the program. Articles on aerosols have appeared in national consumer magazines, city and local newspapers, industry magazines and newsletters, house organs, syndicated columns, and business and retailing trade publications.

—★—

Crown Florida Rep.

Crown Cork & Seal Co's Atlanta Southern division office announced late in March the appointment of Packaging and Plastics Co., 408 E. Okeechobee Road, Hialeah, Fla., as their jobber-distributor for Florida. Aerosol containers, metal closures, and Crown's general line of cans will be handled by Packaging and Plastics. Aldo S. Pero heads the firm's sales activities.

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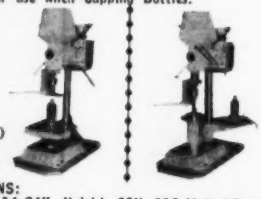
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Two in "Isotron" Posts

The appointments of E. Smedley Ward, Jr., and Homer B. Greetham to sales posts for the "Isotron" chemicals department of Pennsalt Chemicals Corp., Philadelphia, were announced last month by F. A. Lucard, manager of the department. Mr. Ward, who has been assigned to the New York territory, was formerly an "Isotron" sales representative in Cleveland. He joined Pennsalt in 1957.

E. Smedley Ward, Jr.

Homer B. Greetham

Mr. Greetham will serve aerosol contract loaders and marketers as a sales representative in the Ohio, northern Kentucky, and southern Michigan territory.

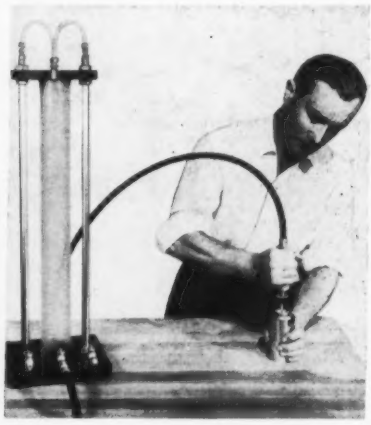
Copp of Risdon Retires

Earl F. Copp, vice-president of Risdon Manufacturing Co., Naugatuck, Conn., retired last month to become special consultant to the company. He also continues as a director and member of the executive committee. Mr. Copp directed the company's aerosol, cosmetic and metal goods divisions and has been in the metal fabrications field for 47 years. He joined Risdon in 1935 as assistant to the president and was elected a vice-president in 1936. Mr. Copp has been a director since 1944.

New "Aerowave" waving lotion in use is part of cold wave and neutralizer aerosol set made by Caryl Richards, Inc., New York. Only professional permanent in an aerosol container, more than one million already have been filled. Peerless Tube Co., Bloomfield, N. J., makes the aluminum, one-piece, seamless container.

Amco Propellant Injector

A new device called the "Amco Pressure Burette" was introduced recently by Aerosol Machinery Co., 80R Magnolia Ave., Westbury, N.Y., for injecting propellant into aerosol containers. The portable, manual machine is designed for small runs and laboratory work. It is 30 inches high, has a solid aluminum base, and all parts are said to be corrosion resistant. The injector valve has adapters for use with most aerosol valves. Capacity of the machine is 1,000 cc of propellant.



—★—

New Aerosol Wave Set

A twin aerosol set containing cold waving lotion and neutralizer was put on the market nationally last month for beauty salons by Caryl Richards, Inc., New York. Said to be the only professional permanent packaged in aerosol containers, the new product incorporates a semi-fluorinated hydrocarbon propellant and a waving formula claimed to cut down objectionable odor and volatility by eliminating ammonia. Tradenamed "Aerowave," the lotion and neutralizer are packed in 3.75 ounce containers of extruded aluminum, one-piece, seamless construction, made by Peerless Tube Co., Bloomfield, N. J. Aerosol Techniques, Inc., Bridgeport, Conn., is the filler and Precision Valve Corp., Yonkers, N. Y., supplies the valve and nozzle. "Aerowave" retails for $2.

Production...

EQUIPMENT • MATERIALS • PROCESSING

"ASTM Committee D-12 Meets"

Soap Plant Observer

New Patents

Bulletins and Equipment

Book Reviews

Dr. Anthony M. Schwartz, right, of Harris Research Laboratories, Washington, D. C., receives from E. W. Blank of Colgate-Palmolive Co., 1960 award of merit of Committee D-12 (Soaps & Other Detergents). A.S.T.M. Award was made during Committee D-12 meeting in New York last month.

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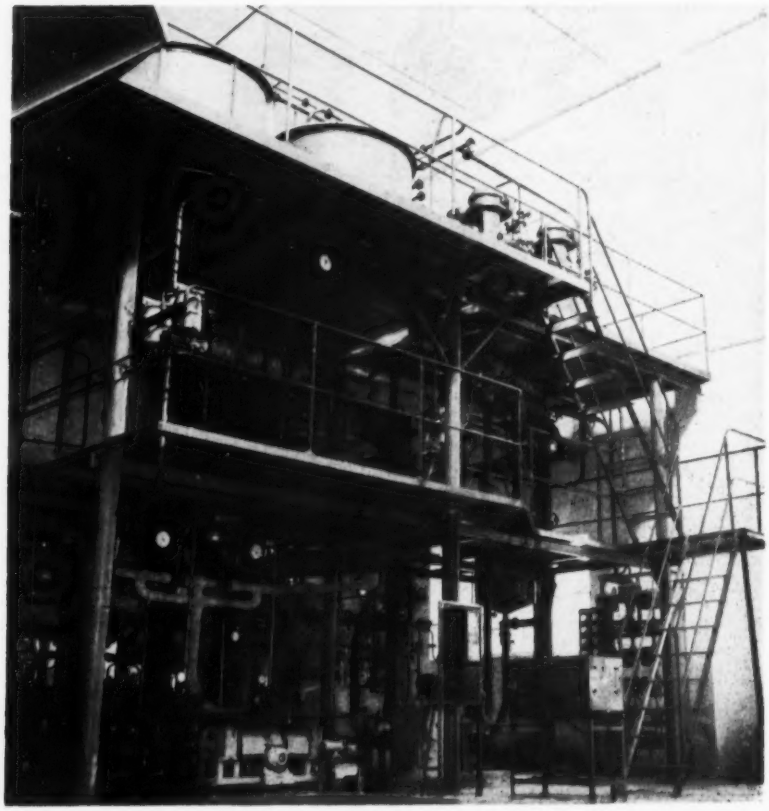

General view of the continuous and automatic saponification plant for fatty acids.

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ASTM Committee D-12 Meets

COMMITTEE D-12 on Soaps and Other Detergents of the American Society for Testing Materials honored Anthony M. Schwartz at its annual meeting held at the Park Sheraton Hotel, New York, March 14 and 15. E. W. Blank of Colgate-Palmolive Co., vice-chairman of D-12 and chairman of its award committee, presented Dr. Schwartz with the 1960 award of merit in recognition of outstanding contribution to the knowledge of detergents and detergency. Dr. Schwartz is associated with Harris Research Laboratories, Washington, D. C. He is co-author of "Surface Active Agents" by Schwartz and Perry (1949) and "Surface Active Agents and Detergents" by Schwartz, Perry and Berch (1958), both outstanding texts in the field. Milton Harris, head of Harris Research Laboratories, and J. H. Brant of Colgate-Palmolive spoke in honor of Dr. Schwartz, who responded with a short talk. He outlined briefly the meaning of standards to the industry and said that Committee D-12 had pioneered many test methods. He called D-12 a courageous group which had not shied away from the most difficult problems encountered in developing performance test methods.

Other highlights of the meeting included a revision of the standard specifications for liquid toilet soap. This revision developed by subcommittee S-2, Specications for Soaps and Synthetic Detergents, under the chairmanship of W. H. Joy, Bell Telephone Laboratories, Inc., was accepted as tentative standard D-799-60. It is successor to D-799-51, first adopted in 1945 and last revised in 1951. The new version takes cognizance of new raw materials such as tall oil fatty acids. Full text of D-799-60 follows:

Scope

1. These specifications cover liquid toilet soap. Two types are desired as follows:

Type A — Liquid (15 per cent minimum anhydrous soap).
Type B — Concentrate (35 per cent minimum anhydrous soap).

General Requirements

2. (a) Type A shall be a clear solution of pure vegetable oil, potash soap, with or without glycerol or alcohol. It shall be ready for use and form a satisfactory lather.
   (b) Type B shall be a concentrate containing sufficient organic sequestering agent so that when diluted for use with 1.5 parts of ordinary tap water a clear stable solution having satisfactory lathering properties shall result.
   (c) Both types shall be mildly perfumed. The odor shall not be objectionable in the soap as received, or in a hot solution of the soap in water. The material shall not leave any objectionable odor on the skin or other surfaces, after washing with a water solution of the soap and rinsing thoroughly with plain water.
   (d) Neither type shall have any undue corrosive action on the containers, liquid soap lines, dispensers or valves.
3. Liquid toilet soap shall conform to the requirements as to chemical composition prescribed in Table 1.

Honoring Dr. A. M. Schwartz of Harris Research Laboratories at Committee D-12 meeting, l. to r.: J. H. Brant, Colgate director of research; Milton Harris, Harris Research; Mrs. Anthony Schwartz; Dr. Schwartz; E. W. Blank of Colgate giving presentation address, Jay C. Harris of Monsanto, D-12 chairman; M. D. Huber, ASTM; and H. R. Suter of Wyandotte

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Table I. Chemical Requirements

	Type A	Type B
Total anhydrous soap, calculated as potash soap, min. per cent	15.0	35.0
Free alkali as KOH, max. per cent	0.05	0.15
Free acid as oleic, max. per cent	0.1	0.2
Matter insoluble in alcohol, max. per cent	0.5	1.0
Matter insoluble in water, max. per cent	0.1	0.2
Chlorides, as KCL, max. per cent	0.3	0.5
Sulphates, max.	Trace	Trace
Sugar, max.	Trace	Trace
Unsaponified plus unsaponifiable matter, max. per cent	0.6	1.6
Titer — mixed fatty acids, max.	—	32
Acid number — mixed fatty acids; max.	260	260
min.	215	215
Rosin acids, max.	1.0	2.3
pH (5 per cent solution) max.	10.2	10.2
Organic sequestering agent, min.		See Note*

* Note — *Sequestering Agent* — Type B shall contain sufficient organic sequestering agent to give a clear solution when one part of the concentrate is diluted with 1.5 parts of water having a hardness of 500 ppm as calcium carbonate.

All constituents shall be calculated on the basis of the soap as received.

Basis of Purchase

4. The material shall be purchased by net volume of soap as received. One gallon of liquid soap is equal to 231 cu. in. at 15.5 C (60 F).

Methods of Sampling and Analysis

5. The material shall be sampled and analyzed in accordance with the standard Methods of Sampling and Chemical Analysis of Soaps and Soap Products (A.S.T.M. Designation: D-460). The purchaser reserves the right to use any additional available information to ascertain whether the material conforms to these specifications.

A representative of a major phosphates producer questioned why only an organic sequestrant was mentioned in the specification excluding tetrapotassium pyrophosphate. A representative of Armour suggested permitting an acid number range of from 240 to 265.

The original draft of this specification was patterned on that used by the General Services Administration. Fifty questionnaires were sent to members of the producing and consuming industries and to major ultimate consumers soliciting their suggestions, Mr. Joy reported. The consensus of the 27 answers received resulted in elimination of the paste type product included in the GSA specification for liquid soap and in a number of other changes. One of the outstanding and most helpful replies mentioned by Mr. Joy was a letter from A. G. Bowers, president of Pioneer Chemical Co., Cleveland.

One of the task groups of S-2 is engaged in developing standards for a heavy duty high sudsing liquid detergent under the chairmanshhip of R. Liss of Monsanto. The necessity for specifications for scouring cleansers was discussed and affirmed. A task group was set up to look into this question. C. A. Gerardi, U.S. Testing Co.; R. E. Hauber of Procter & Gamble Co., and R. M. Kelley of Colgate are among those who have consented to work on this new project.

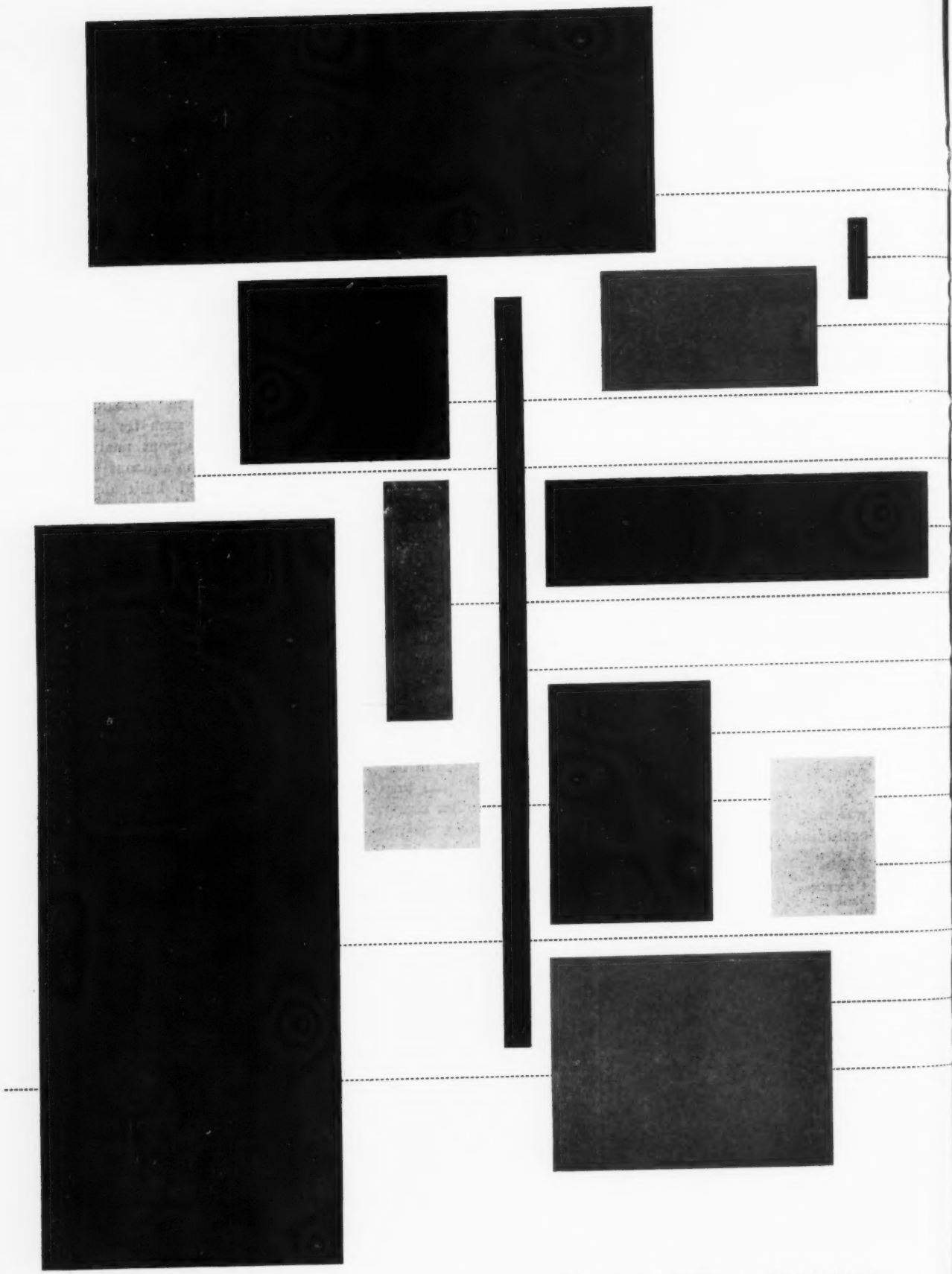
A symposium on dry cleaning detergents was held which consisted of the following contributions: "Micelle Formation and Water Exchange Between Fabric and Micelles in Dry Cleaning Systems," by E. Hirschorn, R. R. Street & Co., Chicago; "Testing Dry Cleaning Detergents of the Charge Type," by J. Schapiro, Dixo Co., Rochelle Park, N.J.; and "Laboratory Methods for Evaluation of Dry Cleaning Detergents," by L. E. Weeks and J. T. Lewis, Monsanto Chemical Co., St. Louis, Mo. These papers will appear in full in future issues of *Soap and Chemical Specialties.*

An ion exchange chromatographic system for the automatic and continuous analysis of phosphates in aqueous solutions of commercial built detergents was demonstrated by D. P. Lundgren of Lever Brothers Co., Edgewater, N.J. No previous purification of the product is required and the installation needs a minimum of supervision, according to the speaker. Ortho-, pyro-, tripoly-, and trimeta-phosphates are measured by this set-up which consists essentially of a gradient elution device, an ion exchange chromatographic column and an "Auto-Analyzer" by Technicon Inc., Chauncey, N.Y.

Actually, the larger phosphate molecules are depolymerized to orthophosphate. The "Auto-Analyzer" uses wet colorimetry, is calibrated internally, plots the elution curve on a recorder, and is said to be accurate to three per cent. Chief practical importance of this development is the economy in time and labor which can be effected by performing automatically and continuously a series of analyses which had previously been a tedious and time-consuming manual task. Any organization having an "Auto-Analyzer" could put it to this use, according to the speaker. Lever has done so for the past 18 months.

"Compatibility of Silicate and Phosphate Builders for Liquid Detergents" was the subject of a

Committee D-12 1960 award of merit. Anthony M. Schwartz with certificate



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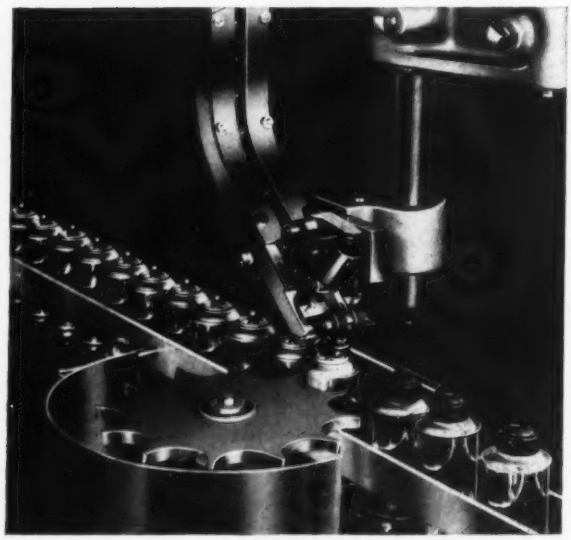

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paper by R. Getty and W. Stericker of Philadelphia Quartz Co., presented by Mr. Getty. A contribution on "Estimation of Soil Redeposition" by Albert R. Martin and Richard C. Davis of Whirlpool Corp. was read by Mr. Martin. Both papers appear in full elsewhere in this issue of *Soap and Chemical Specialties*.

TSP Spec. Standard

Subcommittee S-4 on Specifications for Inorganic Alkaline Detergents, W. Stericker of Philadelphia Quartz Co., chairman, advanced to standard its tentative specifications for trisodium phosphate ASTM D 538-57 T, first issued in 1955 and revised in 1957. In Dr. Stericker's absence S-4's report was read by M. V. Trexler of Westvaco Chemical Division of FMC, chairman of subcommittee T-4 on Analysis of Inorganic Alkaline Detergents. An editorial change in the specification for borax (D-929--50) proposed by S-4 necessitated a corresponding change by T-4 in the standard test for borax which is part of D 501-58, chemical analysis of alkaline detergents. Both changes were passed as standard.

T-4 raised the question whether test methods were needed for potassium hydroxide and liquid sodium silicates. Doubts were voiced from the floor as to whether such work would not overlap that of ASTM Committee E-15. It was decided, however, to go ahead with the project with the specialized needs of the soap and detergent industry in mind.

A report was presented by J. C. Harris, chairman of ASTM-AOCS joint subcommittee T-2, Analysis of Soaps and Synthetic Detergents, on the activities of T-2 and its 24 task groups.

Subcommittee T-2 adopted as tentative a test for sodium alkylbenzene sulfonate in synthetic detergents by ultraviolet absorption. First published as information in 1958, the method is applicable to commercial synthetic detergents and built detergent formulations which do not contain organic additives such as amides. Optical dyes and materials normally found in formulated detergents do not interfere. However, materials other than sulfonates that possess strong ultraviolet absorptions must be absent. Samples containing 30 to 40 per cent active ingredient are used.

The method involves measurement of the ultraviolet absorption of the sample at the maximum absorbance point for sodium alkylbenzene sulfonate (224 mu) and at a selected background point of 270 mu in order to determine the amount of active ingredient present. The percentage of active ingredient is calculated from the above absorptions and data on the pure active ingredient.

ASTM D 1568-58T, Sampling and Chemical Analysis of Alkylbenzene Sulfonates, and D-1570-58T, Sampling and Analysis of Fatty Alkyl Sulfates, have been amended to include a test for chlorides as NaCl.

Alkyl Aryl Test

A test method using cationic titration for determination of alkylaryl sulfonates and fatty alkyl sulfates was passed as tentative. A tentative test method for copper in soaps and soap products, D-460-57T, was raised to standard.

Task group 1 of T-2, Classification of Surfactants, Harry C. Speel of Universal Oil Products, chairman, decided to adopt in essence the system of classification used by Schwartz, Perry and Berch in their book entitled "Surface Active Agents and Detergents."

Task group 16 on Qualitative Identification of Surfactants and Organic Builders, L. E. Weeks of Monsanto chairman, discussed various methods for the basic characterization of ionic types, various possibilities for the refinement of current procedures, and possible adoption of new tests. Future activities will include infra-red analysis in cooperation with task group 5 on infra-red determination of surfactants, E. A. Setzkorn of Continental Oil Co., chairman.

Task group 22 on Sequestrants, E. W. Blank, chairman, has evolved a tentative method for the estimation of ethylene diamine tetra-acetic acid. This is a volumetric method intended for the determination of EDTA in soaps and synthetic detergents.

Reagents Required

Pan Indicator—Dissolve 0.1 gm. of 1-(2 pyridylazo)-2-Naphthol, Eastman Organic Chemical No. 7192, in 100 ml of methyl alcohol.

0.01 M. $CuSO_4 \cdot 5H_2O$ — Dissolve 2.497 gm. of $CuSO_4 \cdot 5H_2O$ in water and dilute to 1 liter. 1 ml of this solution is equivalent to 0.00372 gm. EDTA. The actual EDTA equivalent should be determined by the titration of a known weight of EDTA.
1 ml of the $CuSO_4 \cdot 5H_2O$ solution is also equivalent to 0.00424 gm. di-Na-salt, 0.00446 gm. tri-Na-salt or 0.00468 gm. or the tetra-Na-salt.

Procedure

Weigh 3 to 5 gm. (± 0.001 gm.) of sample estimated to contain 1% of EDTA. The size of the sample should be varied depending upon the actual amount of EDTA present. Weigh into a 250 ml beaker, dilute to approximately 75 ml of water and adjust the pH to approximately 5.0 by the addition of acetic acid.

Add 4 drops of the Pan indicator.

Titrate the sample with 0.01 molar copper solution to a transition in color from yellow to red.

Calculation:

$$\% \text{ EDTA} = \frac{\text{Vol. x EDTA Equivalent x 100}}{\text{Wt. of Sample}}$$

Future Plans

Future plans of task group 22 call for examination of some of the available methods for determination of sequestering power *per se*. The standard, A (OSC) 3929, proposed by the British Standards Institution is considered sufficiently simple and rapid to warrant investigation.

Task group 24 on Bleaching, C. H. Schmiete, chairman, has developed a tentative test method for sodium hypochlorite and is now working on oxygen releasing per-compounds.

Task group 3, Bibliographic

(*Turn to Page* 197)

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Technical Service Department,
Sugar Beet Products Co.

MANY points raised at the January meeting of the Soap Association, give food for thought to those engaged in chemical manufacturing and compounding. With chemical processing techniques becoming increasingly complex and the consumer expecting even higher quality in chemical specialties, engineers, technicians, operators and maintenance people are now expected to show an increasingly higher level of training than was the case a few years ago. This was emphasized by Jim Cloney, General Aniline and Film Corp., in his report on the Factory Production Discussion Group led by Dick Kozacka of Monsanto.

The increase in the use of new and complex instrumentation devices forecast by this group will place greater demand on the quality of both professional and hourly personnel needed for operation and maintenance. The group laid down certain precepts for the guidance of production management in facing this situation:

(1) More stringent hiring standards for both technical and hourly employees.
(2) More intensive on-the-job training and retraining.
(3) Incentives such as "tuition refunds" to employees completing outside training courses.
(4) Better communications in explaining to all personnel the changes brought about by advances in technology.

In the writer's experience, one of the problems facing the small soaper has been the maintenance of these more complex devices. Some twenty years ago when he was serving his internship in the chemical engineering department of a large soap company, it

was decided to have a separate department for instrument maintenance. It started out with a young chemical engineer and an experienced hourly man who had a lot of practical know-how. This was one of the first of the so-called instrument departments. Today such departments are common in the larger companies and they pay their own way many-fold.

In the smaller firm the job of maintenance has a way of being a second cousin among the staff assignments under the factory superintendent. All too often it becomes a spare time job for the plant engineer assisted by whoever is available from the operating crew and is handy at that sort of thing.

The emergence of sanitary maintenance as an entity separate from operations maintenance is a step forward. Each has enough specialization to be independent, yet both have techniques and systems in common — for example: programming.

Getting back to the subject of automation permitting our industry to look forward to improved quality and reliability of product, we would like to add a word of caution: A well-seasoned chemical engineer designs his process with due consideration to the conditions under which it will be operating—particularly personnel.

The writer recalls one of the smaller companies buying a soap-making process complete in package form with a full battery of pneumatically operated flow control devices. It was not long before this firm, like so many in the chemical specialties field, was busy making modifications here and there to adapt the setup to a few other products needing a manufacturing process. In general the whole venture turned out quite well but the company went through many troublesome moments before the training of operating and maintenance personnel could be brought up to the level of the complexities of the equipment. For example, it was a long time before those concerned came to realize the importance of a pure and moisture-free air supply to pneumatic controllers.

The next time it was necessary to design a process involving automatic control, the matter was considered in the light of past experience. A careful study was made of the degree of process variation that the finished product quality specifications would permit and, consequently, the amount and type of control needed. A simple type of mechanical flow control was selected that insures the degree of control required. It has proved to be trouble-free in operation and involves a minimum of maintenance. I suppose when the industry figures the housewife is ripe for another change in packaging mode, something like this will appear on the scene and liquids will be "last year's hat."

The discussion on new products at the Soap Industry convention also touched on the approach to product development stemming from customer needs. To follow this approach successfully a closer liaison between marketing and technical people is needed in both the chemical specialties companies

and their supplier firms of the chemical industry. The group reported on the "serious gap between the chemical industry development laboratories and the laboratories and merchandizing organizations of the soap and detergent companies. This gap can be bridged in part," the group felt, "by having chemical industry sales representatives who have a better understanding of the technical and merchandising problems of the soap and synthetic detergent industry."

This situation has been mentioned before in this column, particularly regarding the supply of dermatological data on ingredients that go into industrial skin cleaners. It would also seem desirable for the chemical industry to hire for their applications laboratories more people with consumer product development experience instead of competing with one another for the smartest lad in the graduating class.

Among subjects discussed by the New Products and Raw Materials Group at the Soap Association's convention was the question of dispensing household detergents for home laundry and dishwashing. The report presented by Peter B. Baker, Arthur D. Little, Inc., indicated that in 1970 probably over half of all home laundry installations will have dispensing equipment for laundry detergents and auxiliaries. "Equipment of this sort will require easily dispensed products, probably liquid but perhaps tablets or capsules," says the report.

It would not be surprising if the trend should shift somewhat away from the liquids and in the direction of tablets and capsules. Water-soluble packages have been given consideration by several alert firms. On aging some of the plastic packets have shown dissolution rates decreasing to the point of jeopardizing their usefulness, but they may have a place in the automatic washer where high turbulence can play an active part in breaking them down. However, knotty problems of humidity control in the dispensing compartment must be overcome to make this approach workable.

The idea of tablets is appealing, particularly if they can be loaded into a moisture-free chamber and dispensed through some type of spring-loaded closure that will minimize introduction of moisture into the chamber. Such tablets, it would seem, could be fashioned so as to break apart and dissolve rapidly like the modern "Aspirin" or "Alka-Seltzer" disk.*

Much can be said for the housewife's present preference for the compactness of the liquid package, but the compressed tablet would be nearly the same. It offers the technical people some intriguing opportunities to formulate again efficient, economically priced detergents in solid form.

*Such a product was recently placed on the market by Procter & Gamble Co., under the trade name "Salvo".

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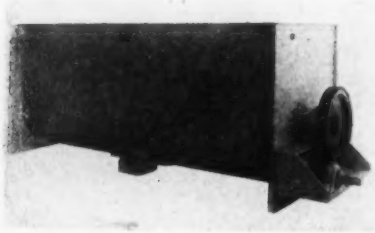

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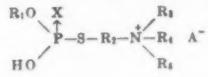
NEW Patents

The data listed below are brief reviews of recent patents. Complete copies may be obtained from the publisher of this magazine: — Mac-Nair-Dorland Co., 254 W. 31st Street, New York 1, N. Y. Remit 50¢ for each copy. For orders received from outside of the United States send $1.00 per copy.

No. 2,922,739. O-Hydrocarbon, S-(Quaternary Ammonium Substituted Alkyl) Esters of Phosphorothioic Acids and Insecticidal Compositions Thereof, patented by Jack A. Snyder, Claymont, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del. Covered by this invention are di-O,S-hydrocarbon esters of phosphorothioic acid and phosphorodithioic acid represented by the formula



where:

X is selected from the group consisting of oxygen and sulfur.

R_1 is selected from the group consisting of alkyl radicals of from 1 to 4 carbon atoms, inclusive, alkenyl of 2 to 4 carbon atoms, benzyl, phenyl, halophenyl, nitrophenyl, and tolyl radicals.

R_2 is an alkylene radical of 2 to 4 carbon atoms.

R_3 is selected from the group consisting of alkyl radicals of 1 to 4 carbon atoms, inclusive, and alkenyl radicals of 2 to 4 carbon atoms.

R_4 and R_5 are the same and are selected from the group consisting of alkyl radicals of 1 to 4 carbon atoms, inclusive, and alkenyl radicals of 2 to 4 carbon atoms with the proviso that R_4 and R_5 can be taken together to form, with the included nitrogen, a ring selected from the group consisting of pyrrolidine, piperidine, piperazine, and morpholine.

A is selected from the group consisting of halogen, alkyl sulfate of from 1 to 4 carbon atoms, inclusive, benzenesulfonate, and toluenesulfonate.

Also claimed is an insecticidal composition comprising, in an insecticidally effective amount, at least one compound described in claim above, and an inert carrier.

No. 2,915,472. Brightening Compositions, patented by Samuel Pressner, Richmond, Va. Claimed under this invention is solid comminuted detergent and brightener composition for fabrics consisting essentially of a comminuted solid detergent having absorbed thereon a solution of a water-insoluble amino-coumarin compound exhibiting blue to violet fluorescence and selected from the group consisting of a di-lower -alkylamino-coumarin and a di-lower-alkylamino-coumarin having a lower-alkyl nuclear substituent, said amino group being attached to the benzene nucleus, in pine oil, the coumarin compound being present in an amount sufficient to produce fluorescence on the material being treated and the pine oil being present in an amount sufficient to dissolve the amino-coumarin.

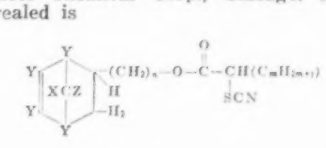
No. 2,921,908. Sequestering Composition Containing a Corrosion Inhibitor, patented by Homer W. McCune, Wyoming, O., assignor to Procter & Gamble Co., Cincinnati. Revealed is a sequestering composition of inhibited corrosiveness, as used in dilute aqueous alkaline medium, toward aluminum, zinc and German silver, consisting essentially of a calcium sequestering amino polycarboxylate which is a soluble salt of an amino polycarboxylic acid selected from the group consisting of ethylene diamine tetra carboxylic acid, hydroxy alkyl ethylene diamine tricarboxylic acid, and nitrilo tricarboxylic acid in which the carboxylic acids contain 2 carbon atoms, and as an inhibitor of corrosion a compound of the formula

$$R(OC_2H_4)_xOPO_2MN$$

where R is an alkyl group of 14 to 22 carbons in chain length, **x** is 1 to 7, M and N are taken from the group H, Na, K, NH_4 and alkylol substituted ammonium in which the number of alkylol substituents is 1 to 3 and the number of carbon atoms in each alkylol substituent is 2 to 3, said inhibitor being present in amounts of from about 3% to about 40% of said amino polycarboxylate.

The composition of claim above in combination with a detergent selected from the group consisting of soluble soaps, anionic non-soap synthetic detergents, nonionic synthetic detergents, and mixtures thereof are also covered.

No. 2,909,458. New Compositions of Matter, patented by Sydney B. Richter, Chicago, assignor to Velsicol Chemical Corp., Chicago. Revealed is

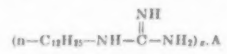


wherein X and Z are independently selected from the group consisting of hydrogen, chlorine and bromine; each Y is selected from the group consisting of bromine and chlorine; **m** and **n** are each selected from the group consisting of 0 and integers from 1 to 14.

9. The method for the control of undesirable fungus growth which comprises applying to the material being protected an effective quantity of the composition of claim 1.

No. 2,916,414. Urea-Hexachlorocyclohexane Insecticide, patented by Bernhard Raecke and Josef Drevers, Duesseldorf, assignors to Henkel & Cie., Duesseldorf-Holthausen, Germany. An insecticide is covered comprising a surface active agent and a dispersion of an adduct of urea and hexachlorocyclohexane.

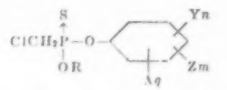
No. 2,921,881. Fungitoxic-Bacteriotoxic Guanidine Compósitions, patented by Glentworth Lamb, Stamford, Conn., assignor to American Cyanamid Co., New York. The patent claims a fungitoxic-bacteriotoxic composition comprising an inert carrier having dispersed therein as an active ingredient a compound of the formula



wherein A is a polybasic acid selected from the group consisting of malic, phthalic and boric and **x** is selected from one and two.

No. 2,913,418. Tar Remover, patented by Louis C. Sohngen, Hamilton, and Jack J. Bulloff, Dayton, O., assignors to The Las-Stik Manufacturing Co., Hamilton, O. A liquid composition for removing tar from painted surfaces, said composition consisting of the following constituents in the proportionate amounts by weight, gasoline 96%, finely divided clay marking pigment 3%, colloidal silica 1%, said pigment and colloidal silica having an average particle size of 0.1 millimicron to 20 microns, and the ratio of pigment to colloidal silica being in the range of 2:1 to 5:1.

No. 2,910,402. Compositions and Methods for Destroying Insects, patented by Homer E. Fairchild, assignor to E. I. du Pont de Nemours & Co., Wilmington, Del. This patent teaches a method for killing insects comprising contacting the insects with an insecticidal amount of at least one compound represented by the formula



wherein R is an alkyl group containing less than five carbon atoms; Y is nitro; Z is chloro; A is methyl; n is a number from 0—2; m is a number from 0—3; q is a number from 0—1; $n+m$ is a number from 1—3; and $n+m+q$ is a number from 1—3.

No. 2,923,659. Pesticidal Composition, patented by George E. Ziegler and Laverne Paul Fotsch, Evanston, Ill., assignor to Zonolite Co., Chicago. Revealed is a method of producing an insecticidal product which comprises disposing within the interstitial spaces of 100 parts, by weight, of unexfoliated vermiculite, an emulsion comprising by weight, about 4 parts of water, about 2 parts of malathion, about 2 parts of peanut oil, and an emulsifier.

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Products and PROCESSES

Hand Cleaner

A paste claimed to remove all types of printing inks from hands is made up as follows:

	kilos
Soap chips	2.00
Ethanol, denatured, 99.8%	10.00
Diethylene glycol monoether acetate	6.00
Diethylene glycol monoethyl ether	2.00
Ethylene glycol monoethyl ether	1.00
Sodium hydroxide	2.00
Glycerol	0.25
Castor oil	0.25

These ingredients are mixed at 85 to 90°C. until a uniform solution of soap chips is obtained. After cooling, 12 kilos of powdered pumice or quartz sand are stirred into the gelatinous paste. (Norwegian patent application 126,436.)

—★—

"Veegum" in Aerosols

Seven new formulas for household chemical specialties have just been published in the form of a technical data sheet by R. T. Vanderbilt Co., 230 Park Avenue, New York 17. These include two pressure packaged items incorporating "Veegum", an inorganic hydrophilic colloid, which, according to Vanderbilt acts as emulsion stabilizer, suspending agent, and viscosity modifier.

A liquid glass cleaner formulation calls for the following ingredients:

	% by weight
A	
"Veegum"	1.5
Water	67.5
B	
"Span 20" (Atlas Powder Co.)	2.0
"Tween 20" (Atlas Powder Co.)	2.0
Ammonia	2.0
Deodorized Kersone	15.0
Abrasive	10.0

First slowly add "Veegum" to water, agitating continually until smooth. Then add the components in B in the order listed with mixing after each addition.

Load 100 grams of above concentrate with 20 to 30 grams of propellant 12 in Continental can fitted with Precision spray valve.

An aerosol furniture polish is formulated as follows:

	% by weight
A	
Carnauba wax (North Country #3)	3.2
Beeswax	1.3
Ceresin	1.3
Silicone oil (350 cps.)	3.0
Stearic acid	5.0
B	
Triethanolamine	2.0
C	
Naphtha	10.0
D	
"Veegum"	1.0
Water	73.2

Procedure: I. Melt A; II. Add B to A keeping temperature at 80 to 85°C; III. add C to II; IV. add "Veegum" to water slowly, aggitating continually until smooth and heat to 85°C; add D to III and mix until cool.

Load 100 grams of above concentrate with 10 to 15 grams of a 60/40 mixture of propellants 12/114 in Continental can equipped with Precision foam valve.

—★—

Antibacterial Toothpaste

Chlorophenyldiguanido hexane has been found effective against organisms causing dental caries, especially against *Lactobacillus acidophilus odontolyticus*. Formulated into toothpastes containing nonionic detergents this compound is said to be adsorbed onto the surface of the teeth. (British patent No. 825,527; International Chemical Co., London.)

—★—

Mild Detergent Formulas

Dishwashing compounds of superior mildness may be formulated by adding to alkyl sulfate or alkyl aryl sulfonate a lauryl ether sulfate having five or more ether groups in the chain. Foaming power is a secondary consideration where ether sulfates are combined with other high foaming detergents, according to the February issue of *Schimmel Briefs*, published by Schimmel & Co., 601 West 26th Street, New York 1. Preparation of the alkyl ether sulfates and their use in diswashing compounds are described in patents held by Thomas Hedley & Co., Procter & Gamble's British associate.

Animal tests are described for preliminary screening of these compounds and a large scale experiment involving 13 detergents and 300 housewives which showed the mildness prediction based on animal experiments to approximate the results obtained with humans.

The proportion of lauryl ether sulfate required in detergent compositions to protect the skin varies from five to 100 per cent, based on the weight of the other surface active material. In a very dilute solution of detergent a low proportion of additive gives the desired result. In highly concentrated solutions an amount of lauryl ether sulfate equal to the weight of the other detergent may be required. A liquid dishwashing detergent of "outstanding" mildness is composed as follows:

	parts
Ammonium lauryl sulfate	19
Ammonium lauryl $(EtO)_3$ sulfate	19
Coconut monoethanolamide	10.5
Ethyl alcohol	26
Water	25.5

Lauryl ether sulfates having three or four ether groups are suggested as shampoo additives because of their good cutaneous and foaming properties, according to *Schimmel Briefs*. Whereas foaming power of sodium lauryl sulfate is affected by water hardness; sodium lauryl ether sulfates foam equally in soft and hard water and form perfectly clear solutions in hard water.

—★—

Cork Abrasive Cleanser

A new type of cleaning and scouring preparation contains powdered cork in volumetric proportions of 15 to 25 per cent powdered cork to 85 to 75 per cent abrasive powder. (British patent 819,709; Mrs. M. M. Alocoque Debrun, Baile Atwa Cliath, Eire.)

Book Reviews

Ion Exchange for Laymen

Ion exchange techniques, their mechanism and applications are lucidly set out and explained in a pocket size book entitled "Elements of Ion Exchange" by Robert Kunin. Written for the "uninitiated who have only a slight background of basic chemistry", the volume deals with the general aspects of the topic including historical background; nature of ion-exchange materials; structure and synthesis and testing and evaulation of ion exchange materials.

The author then turns to the general principles of ion-exchange applications. Among the most important functions of ion exchange substances are: transformation of ionic species; removal of ions; concentration of ions; fractionation of mixtures; and catalysis.

Transformation of ionic species involves replacement of one ionic species by another. Softening of water is an example of the removal of undesirable Ca and Mg ions and replacement of non-scaleforming Na ions. Deionization of water is an example of removal of ions.

For water-softening by ion exchange in the home, sulfonate polystyrene based resins are employed or synthetic gel silicates. Desalting of sea water, purification of glycerine, processing of polluted waters, are just a few of the ubiquitous industrial and other uses of ion exchange.

Although intended for operating personnel, physicians and engineers responsible for water and sewage treatment, the book should be useful in providing analytical, physical and industrial chemists with a concise and clear picture of the potentials and working of ion exchange.

Elements of Ion Exchange by Robert Kunin, Rohm & Haas Co., Philadelphia, published by Reinhold Publishing Corp., New York, Feb. 1960. Cloth bound, 7½ by 5 inches, 164 uages, price $5.75.

—★—

New Sonneborn Bulletin

A new bulletin from L. Sonneborn Sons, Inc., 300 Park Ave. South, New York 10, is concerned with the control of air-borne infections through the treatment of mattresses and bedclothes with white oil in manufacturing and laundering. Results of investigations by the U. S. Army Medical Corps in this field are related in the bulletin. Methods for control are described in the company's technical data file F-39 which contains complete application and test data on Sonneborn's "Klearol" white mineral oil. Both the bulletin, identified as Current Topics No. 61, and the technical data file are available from the company.

—★—

Marchon Hydrotopes Data

"Eltesol" hydrotropes for use in detergent formulations are the subject of a 12-page booklet issued recently by Marchon Products Ltd., Whitehaven, Cumberland, England. Hydrotropes are compounds which—in aqueous solution—act as solubility boosters for other substances which normally have low water solubility. The "Eltesol" line includes: sodium xylene sulfonate, sodium toluene sulfonate, potassium xylene sulfonate, and potassium toluene sulfonate. Each of these substituted aromatic sulfonates comes in liquid and flake form.

Addition of from one to three per cent (of the finished product) of sodium toluene sulfonate (100 per cent) to heavy duty detergent slurry will permit spray drying of very low water content slurries into crisp, free flowing powders, according to Marchon.

In heavy duty liquids where tripolyphosphate or pyrophosphates may present a solubility problem, 1.5 to 10 per cent sodium xylene sulfonate is claimed to act as an effective coupling and solubilizing additive.

Light duty liquid detergents for dishwashing, light laundry or hard surface cleaning are said to profit from the presence of toluene and xylene sulfonates as solubilizers and cloud point depressants.

In a limited sense, toluene and xylene sulfonates contribute to the total detergency of such systems, according to Marchon. In support of this claim certain hard surface liquid detergents are cited. These formulations are said to contain up to 20 per cent sodium toluene sulfonate with a high proportion of complex phosphates and relatively small amounts of surface active agents.

Finally, "Eltesols" are suggested as good hard surface cleaners for detergent systems where foam is not desired such as machine dishwashing preparations.

—★—

GE Guide to Silicones

The silicone products department of General Electric Co., Waterford, N. Y., has published an eight-page illustrated bulletin on uses and properties of its silicone products. Uses of silicones in polishes, cosmetics, and other chemical specialties are described in the guide, which is identified as CDS-129B.

—★—

Sweeping Compound Tests

Effect on slipperiness of floors resulting from the use of sorptive mineral materials in the form of sweeping compounds was studied at a recent meeting of Committee C-23 on Sorptive Mineral Materials of the American Society for Testing Materials. A need is seen by the committee for a group of performance standards for sweeping compounds which includes the above effect. A subcommittee is currently surveying industry for plant evaluation tests now being used.

Methods have been submitted to ASTM for consideration for sampling, free moisture determination, loss on ignition, and sieve

analysis. Additional procedures being studied cover bulk density, oil absorption, dust content, breakdown in water, solubility in water, and mechanical breakdown. Abrasiveness and fire resistance are also under consideration.

A bibliography on *Test Methods for Sorptive Mineral Materials Used for Floor Surface Maintenance and Safety* has been prepared as a guide to further work. A limited number of mimeographed copies are available from the committee secretary.

Officers of the group are: A. R. Balden, Chrysler Corp., Detroit, chairman; L. M. Mank, Minerals and Chemicals Corp. of America, Menlo Park, N. J., vice-chairman; and R. L. Shirley, Eagle-Picher Co., 900 American Building, Cincinnati 1.

★

Bacteriological Test Kit

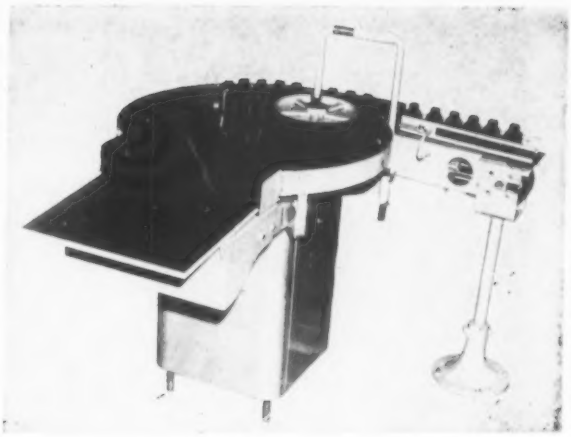
A field kit for bacteriological smear tests featuring a bi-sected disposal culture dish is now available from Talb Industries, Inc., Front and Master Streets, Philadelphia 22. Originally designed for use with "Sani-Dust," the firm's germicidal dust control system, the test kit lends itself to a wide range of smear tests.

The kit includes a bisected sterile culture dish of nutrient agar and two sterile cotton swabs, each packed in a glass snap top ampule. The plastic culture dish consists of a bottom plate, 3½ inches in diameter and approximately ⅝ inches high, and a tight fitting cover. Both top and bottom are transparent permitting inspection of contents without opening the plate. The bottom portion of the plate features two slots each of which opens into one of the sections of the plate. The cover has a single slot and by turning the cover the slot can be aligned for introduction of test material.

Two cultures can be prepared on the same plate either on the same medium or on two different media, and the plate need not be opened to make inoculations. These features reduce the number of plates required. The plate and its contents can be disposed of by incineration.

"Sani-Dust" test kit is available with nutrient agar or other media. Special plates can be purchased to be filled by customer. Plates can be bought in quantities, and are said to have a shelf life of several months. They can be sterilized before or after filling.

A sample order of "Sani-Dust" field test kits runs to $2.00 each in one dozen quantities, $1.75 in half gross, and $1.50 in gross lots. Blank test kits cost 50 cents each in gross lots, 65 cents in dozen lots.



A new floating wheel attachment for its "Styl-O-Matic" rotary unscrambling tables was developed recently by Island Equipment Corp., P. O. Box 38-276, Miami 38, Fla. Available for tables now in operation, the attachment provides for the unscrambling of straight-sided, odd-shaped containers.

Field kit for bacteriological smear tests featuring bisected disposable culture dish made by Talb Industries, Inc., Philadelphia.

★

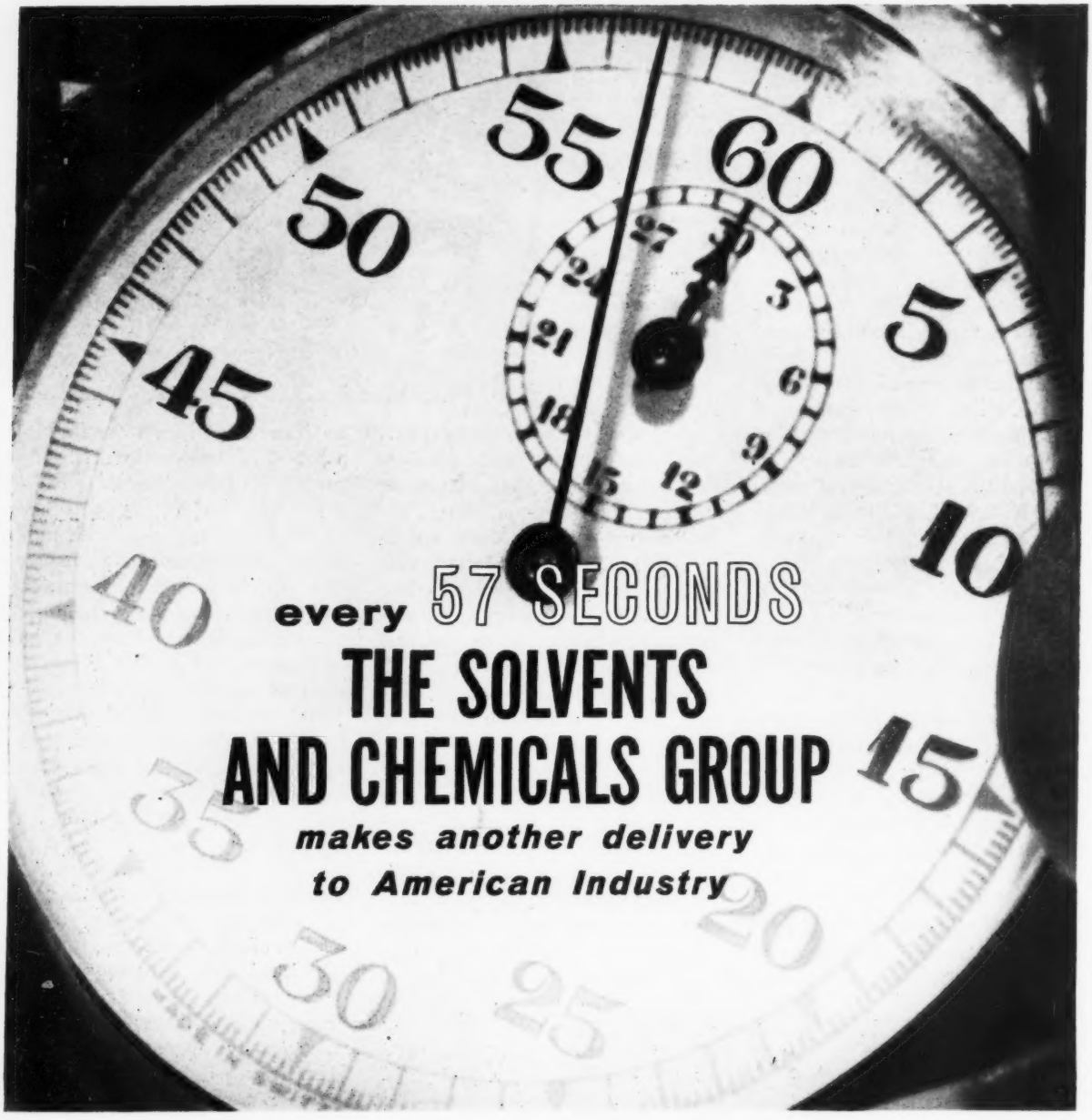
Onyx Surfactant Catalog

A new 24 page catalog of its line of surface active agents was published recently by Onyx Oil & Chemical Co., Jersey City 2, N.J. Each product is described by tradename, active ingredient, per cent activity, physical state, general use, specific applications and properties. Products are divided into three general classes: anionic, cationic, and non-ionic, and there is a two-page section explaining the chemistry of each.

★

Folder on Gluing System

A four-page illustrated folder was issued recently by the Portland Division, Emhart Manufacturing Co., Portland, Conn., describing its Standard-Knapp Glu-Line system for case gluers and sealers. The new system is said to provide simple, direct glue application economically.



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Aliphatic Petroleum Naphthas, Alcohols and Acetates, Alkanolamines, Petroleum and Coal Tar Aromatic Solvents, Chlorinated Paraffins, Chlorinated Solvents, Glycerine, Glycols and Glycol Ethers, Ketones and Esters, Plasticizers, Resinates, Rosins, Terpene Solvents, Waxes.

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News...

PEOPLE · PRODUCTS · PLANTS

Adell Chemical Co. Sold

* * *

George Fuld Joins Firm

* * *

Babbitt Elects Directors

* * *

West Berkeley Vitamins Co.

Herman E. Hambrecht, general purchasing agent of American Home Products Corp., New York, was recently appointed vice-president in charge of purchasing for Boyle-Midway Divisions. Mr. Hambrecht has been associated with various divisions of American Home Products since 1928 when he joined the purchasing department of Wyeth Laboratories.

IN YOUR IMPROVED PRODUCTS . . .

Jefferson SURFONIC® Surface-Active Agents make the best kitchen helpers

Men are nice to have around but not so dependable in the kitchen as your work-saving products that contain SURFONIC® Surface-Active Agents. Virtually every item she keeps beneath the sink is made better by the broad modification properties of these Jefferson surfactants . . . low-foaming laundry detergents, low- and high-foaming liquid detergents, general purpose cleaners, germicidal detergents, sanitizers, metal cleaners, and many others. And indirectly, the cost of our foods is reduced by the use of surface-active agents in insecticides and herbicides.

SURFONIC® Surface-Active Agents are adducts of ethylene oxide and nonyl phenol (N-series 10 to 300) or tridecyl alcohol (TD-series 30 to 150). These surfactants are nonionic and have excellent wetting, detergency, solubility, penetration, dispersion, emulsifying and compatibility properties. They are stable over a wide range of conditions.

Write for free comprehensive technical bulletin, "SURFONIC® Surface-Active Agents" . . . Jefferson Chemical Company, Inc., 1121 Walker Avenue, P. O. Box 303, Houston 1, Texas.

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SURFONIC® Surface-Active Agents • Ethanolamines • Morpholine
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JEFFERSON CHEMICALS

OHS

News

Ruston Joins L. A. Soap Co.

Appointment of Charles R. Ruston as executive vice-president of Los Angeles Soap Co., Los Angeles, Calif., was announced last month by Andrew K. Forthmann, the firm's president.

Charles R. Ruston

Mr. Ruston has been in the soap and specialties marketing field for the past 19 years. Prior to his recent appointment he was with Lanolin Plus, New York, and earlier for five years with Revlon, Inc. Previously he had been associated with Colgate-Palmolive Co. for 14 years, where he served as merchandise manager in charge of "Super Suds," "Ajax Cleanser," and "Palmolive" soap sales.

The 100 year old Los Angeles Soap Co. makes and markets soaps, detergents, and related products under the "White King" label.

—★—

Babbitt Elects Directors

The election of Paul L. Kohnstamm, Donald B. Tansill, and Victor D. Ziminsky as directors of B. T. Babbitt, Inc,. New York, was announced last month by Marshall S. Lachner, president. The elections expand the board of directors from 13 to 16. Mr. Kohnstamm is president of H. Kohnstamm & Co., New York, soap, color and chemical firm; Mr. Tansill is board chairman of M. Lowenstein & Sons, textiles; and Mr. Ziminsky heads Victor D. Ziminsky Co., business consultants.

—★—

New Boyle-Midway V. P.

Herman E. Reinhardt has been appointed vice-president of purchasing for the Boyle-Midway Division of American Home Products Corp., New York, it was announced last month by Bernard Gould, president of Boyle-Midway. With American Home Products since 1929 when he joined the purchasing department of Wyeth Laboratories, Mr. Reinhardt has been associated with various divisions of the company. His most recent position was general purchasing agent for American Home.

—★—

Longfellow to Mennen

John M. Longfellow joined Mennen Co., Morristown, N. J., last month as director of research and development. Formerly in the research and development division of Colgate-Palmolive Co., New York, Dr. Longfellow now is responsible for Mennen's overall research and development operation under a recently expanded marketing program. He also serves on the product development committee. Dr. Longfellow is chairman of the New York Chapter of the Society of Cosmetic Chemists.

John M. Longfellow

Harris in Wrisley Post

The election of Robert N. Harris as vice-president and director of marketing of Allen B. Wrisley Co., Chicago, was announced last month by Eugene F. Bertrand, president. Wrisley is a wholly owned subsidiary of Purex Corp., Ltd., South Gate, Calif. For the past five years, Mr. Harris was vice-president of Edward H. Weiss & Co., one of Purex' advertising agencies. Prior to that he was with the Toni Co., Chicago, in various sales, advertising, and marketing capacities.

Robert N. Harris

—★—

Mrs. Sullivan Retires

Mrs. Estelle D. Sullivan who completed 25 years as executive secretary of the Chemical Specialties Manufacturers Association in December, 1959, retired from active service on April 1. At the CSMA meeting last December in Washington, she was presented with a gold watch and a purse by the Association. When Mrs. Sullivan joined the Association in 1934 she acted as assistant to the late John Wright who was then volunteer secretary. The Association was then known as the National Association of Insecticide & Disinfectant Manufacturers. Mrs. Sullivan continues to live in Greenwich, Conn.

Adell Chemical Co., "Lestoil" Maker, Sold

ANNOUNCEMENT of an agreement to sell Adell Chemical Co., Holyoke, Mass., and its

Jacob L. Barowsky

associated firms, to Standard International Corp., Andover, Mass., was made last month by Jacob L. Barowsky, president and founder of Adell. Included in the agreement are Adell, the parent firm; Lestoil, Inc.; Lestoil Ltd., of Canada; Jackson Associates, Adell's advertising agency; and JLB Realty Trust.

The agreement to purchase for the new owners was signed by John Bolten, Sr., and Daniel E. Hogan, Jr., chairman and president, respectively, of Standard International, and Mr. Barowsky, who signed for himself and his family, Adell's only stockholders. Formal closing of the purchase was expected to take place within two to three months of the agreement. Mr. Barowsky's decision to sell was reportedly based on an unfavorable estate tax situation in regard to family-owned businesses and the assurance of the new owners that the company's management, personnel, product promotion, and community affairs participation policies would be continued.

Standard International is comprised of several companies in this country and abroad in the printing and publishing, housewares, financial, and plastic products fields. Adell, best known for its "Lestoil" all-purpose liquid cleaner and recently introduced "Lestare" water soluble bleach packets, has been noted for its saturation television advertising which spectacularly increased its business during the last six years. After the purchase, Mr. Barowsky will continue in the active management of the company and will serve as board chairman. I. L. Eskanasy, executive vice-president, and A. L. Kingsberg, vice-president and controller of Adell, and president of Jackson Associates, will continue in major executive capacities.

—★—

West Acquires Vitarine

West Chemical Products, Inc., Long Island City, N.Y., recently entered into an agreement to acquire Vitarine Co., New York, and its subsidiaries. The purchase, according to James E. Marcuse, president of West, marks an expansion into the field of manufacturing, packaging, and distribution of drugs and allied products. Vitarine has been in the drug business since 1932 and its 1959 sales were about $2.5 million.

—★—

New Fuld at Fuld Bros.

George Joseph Fuld will join the research staff of Fuld Brothers, Inc., Baltimore, on July 1. Dr. Fuld is the son of Melvin Fuld, board chairman of the company. He has operated several independent research and development laboratories including: Fuld & Brogle, Cambridge, Mass., bacteriological and chemical consultants; George-Harvey Research Associates, Boston, food research; and was a director of Garvey Foods, Inc., Boston, food research and development firm.

A graduate of the Massachusetts Institute of Technology, Dr. Fuld has served as an assistant professor at MIT. He has published several technical articles including one titled "Hardness Testing of Films of Floor Finishes," and delivered a paper at the 46th annual meeting, Chemical Specialties Manufacturers Assn. in December titled "Application of Pendant

George J. Fuld

Drop Measurements to Emulsion Polishes." The paper was co-authored by his father and Harry C. Broll, also of Fuld.

—★—

New Bixon Schedule

A new price and product information schedule was issued recently by Bixon Chemical Corp., 1163 Southern Blvd., New York 59. According to Michael Bixon, president, many new products are listed in the schedule. Copies of the new schedule are available from Bixon, which is marking its fifth year in business in 1960.

—★—

Lever's Record Sales

Record highs in sales and net profits during 1959 were reported last month by Lever Brothers Co., New York. Sales amounted to $409,600,000, an increase of seven per cent over the $382,600,000 reported the previous year. Net profits increased 50 per cent, from $10,100,000, in 1958 to $15,200,000 last year. During 1959 the company brought into national distribution "Handy Andy" liquid household cleaner and "Praise," a pink toilet soap. It also developed a new pink lotion formula for "Lux Liquid," a light duty liquid detergent packaged in a plastic container.

Colgate Sales at Record

Consolidated sales of Colgate-Palmolive Co., New York, set a new record of $581,982,000 in 1959. The previous record of $534,047,000 was set in 1958. Consolidated net income also was reported at a new high of $25,287,000, or $3.11 per common share, compared with $21,166,000, or $2.76 per share, the previous year.

—★—

Acquires Veneer-O-Wax

Veneer-O-Wax Corp., Philadelphia, manufacturers of cleaners, sanitizers, automotive chemical specialties, and wax and resin emulsions, was acquired recently by Chemical Concentrates, Fort Washington, Pa. The Philadelphia firm and its subsidiary, R & R Chemicals, are being integrated into Chemical Concentrates, which is a producer of wax emulsions, roof coatings, caulking and waterproofing compounds, and other specialties.

Leonard M. Winston and Bernard Boyar of Veneer-O-Wax continue in their posts in sales and research, respectively. According to A. F. Ratzer, Chemical Concentrates president, production and laboratory facilities at Fort Washington are being expanded for the marketing and research of the waxes and cleaning and sanitizing compounds which have been added to the company's line because of the acquisition.

—★—

Chemway Sales Increase

Net sales of Chemway Corp., Wayne, N. J., for 1959 were $9,053, 814, compared with $8,455,171 in the previous year. Net earnings also increased, from $305,948, or 27 cents per share in 1958, to $461,577, or 40 cents per share last year.

—★—

New Specialties Firm

A new chemical specialties firm, called Kane Chemical Corp., was established recently at 109 South Main St., Ambler, Pa., by John R. Kane. Initial products of the company are a rust remover and brass and copper cleaner tradenamed "K-711." Mr. Kane also is president of F. G. Okie, Inc., of Ambler, an ink manufacturing firm. The new firm's products will be marketed through a distributor and manufacturer's representative organization.

New Carter Plant

A new manufacturing and office building was recently completed in Cranbury, N. J., for Carter Products, Inc., New York. The one-story building has 250,000 square feet of floor space and is located on a 16-acre site. A complete line of Carter products will be produced at the plant which has space for warehouse and packaging facilities, a control laboratory, office area, and an employee cafeteria. Production already has begun on some products of the Carter line. A two-story research laboratory is under construction adjacent to the new plant.

—★—

Shulton Sponsors TV Show

A documentary film called "The Race for Space," which previously had been denied time on three major networks, will be shown nationally during the week of April 24, courtesy of Shulton, Inc., New York, and 95 independent and network affiliated stations. The major networks were reported to have denied time as a matter of company policy because the film was not produced by their news department staffs.

DETERGENTS GO UNDERGROUND: New York City subways will be bathed with detergent and pressurized steam from this new tunnel cleaning machine. Unit was given an initial tryout last month in Brooklyn. Looking on is NYC Transit Authority Chairman Charles L. Patterson. The idea is to remove close to half a century's accumulation of dust and dirt.

PILOT
DETERGENTS

CONCENTRATED QUALITY CUTS COSTS

HD-90
90% Minimum active dodecyl benzene sodium sulfonate flake

SP-60
56% Minimum Active dodecyl benzene sodium sulfonate paste

ABS-99
96-98% Dodecyl benzene sulfonic acid

TS-60
60% Triethanolamine sulfonate liquid

MORE DETERGENT SUDS PER DOLLAR

10% HIGHER CONCENTRATION AT EQUAL COST—*That is what these unique, cold-processed sulfonates make immediately available to you. The four products above, as well as the four listed below, offer new possibilities for detergent formulations.*

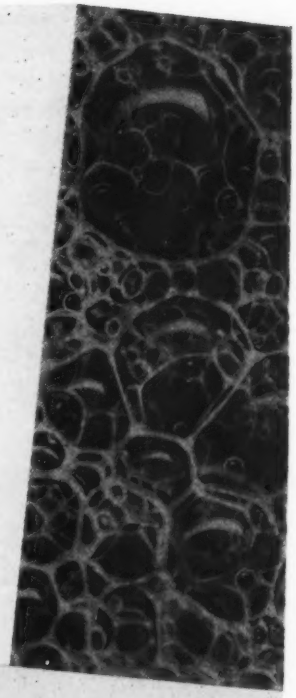
- **AEL-60** AMMONIUM NONYL PHENOL TETRA ETHOXY SULFATE
- **SEL-60** SODIUM NONYL PHENOL TETRA ETHOXY SULFATE
- **KTS-40** POTASSIUM TOLUENE SULFONATE
- **SXS-90** SODIUM XYLENE SULFONATE FLAKE

FOR SUPERIOR LIGHT-DUTY LIQUIDS with outstanding cleaning, rinsing, foaming and detergency characteristics select either AEL-60 as the 60% Ammonium Salt, or SEL-60 as the 60% Sodium Salt.

FOR SUPERIOR HEAVY-DUTY AND ALL PURPOSE LIQUIDS with maximum flexibility, in your formulation specify either KTS-40 as the 40% Potassium Salt, or SXS-90 as the 90% Sodium Salt of Xylene Sulfonate (dry flake). Both of these Pilot Products act as solubilizers to bind organic sulfonates and alkaline builders in stable, clear detergent solutions.

COLD SULFONATION IS THE DIFFERENCE: Pilot cold processing—conducted at below freezing temperatures—gives uniform combinations, complete reaction, and preserves the optimum surface active structure. As a result, Pilot high organic concentration and low sulfate properties *eliminate filtering;* give liquids the highest sudsing and cleaning powers obtainable.

Samples for your formulation available on request. Write today.



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Basic Processors of Hydrocarbons for
Sulfonate Flake
Sulfonate Liquids
Sulfonic Concentrates

TGA Maine Meeting Program Set

A PANEL session on "Toiletry Merchandizing Trends" will be one of the highlights at the Toilet Goods Association's annual convention to be held June 26 to 30 at Poland Spring, Maine,

TGA president A. E. Johnston of Colgate will open the convention formally with his presidential address on Monday morning, June 27. This will be followed by a slide film entitled "The Market of the 60's" to be presented by William L. Fort, manager of drug and toiletries sales promotion, *Life* magazine. Wallace Werble, publisher of *F.D.C. Reports,* will speak on "The Washington Scene." The session will conclude with the election of officers and new directors, S. L. Mayham, executive vice-president of TGA, presiding.

Luncheon will be a "Picnic in the Pines." No subjects have yet been announced for the afternoon session. At 6 P.M. a cocktail party will be given by the fragrance suppliers. Dinner will be followed by a vaudeville show and dancing.

Tuesday, June 28 will be entirely given over to the Toilet Goods Industry Golf Tournament. Prizes and trophies will be presented following dinner.

James O. Packham of A. C. Nielsen Co., Chicago will open the program set for Wednesday morning, June 29 with a talk on "Consumer Buying Trends in Toiletries." The panel session on "Toiletry Merchandising Trends" will be presided over by Bud Keeley of *Beauty Fashion* magazine. Each panelist will spotlight the theme from a specialized angle. The variety store field will be discussed by Preston J. Beil of *Variety Store Merchandiser;* chain drug stores by Harry J. Towers of Associated Chain Drug Stores; department stores by James J. Moyer, cosmetic buyer at Lord & Taylor, New York; wholesale-retail by Henry H. Henley of McKesson & Robbins, Inc.; and house to house merchandising by Russell Rooks, Avon Products, Inc.

Tuesday afternoon, June 29, is open and the convention will conclude with the president's reception at 6 P.M. at which TGA will be host followed by dinner, and dancing.

—★—

Chemical Firms to Move

Manufacturers Chemical Co. and its affiliate, Clarkson Laboratories, whose joint plant in Philadelphia was destroyed by fire recently, will move to a new location in Camden, N. J., according to Edward W. Heller, president of the companies. Clarkson manufactures metal cleaning compounds and a cleaning agent for jet airplane engines and Manufacturers Chemical makes rubber and plastic coatings for the textile industry. The firm's new quarters will be in a one-story concrete brick building at 1450 Ferry Ave. in Camden. Plans are underway for the construction of a 30,000 square foot addition to the building. According to Mr. Heller, annual sales of the two firms are reported to be $2.5 million.

—★—

P&G Top TV Advertiser

Procter & Gamble Co., Cincinnati, with an expenditure of $11,317,641, was the largest spender for advertising on network television for the fourth quarter of 1959, according to the Television Bureau of Advertising, Inc., New York. Following were American Home Products Co., New York, with $7,941,944, and Lever Brothers Co., New York, with $7,597,782.

—★—

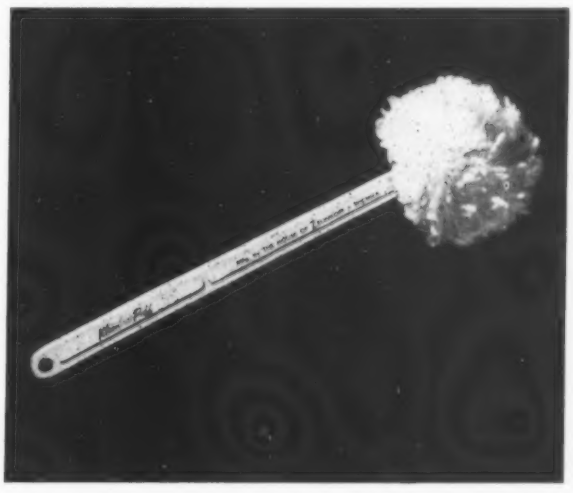
New Pylam Price List

A new price list of certified colors for the cosmetic, drug, and food fields, was issued last month by Pylam Products Co., 799 Greenwich St., New York 14. The price list (#C-L) covers orders of one pound and up on certified colors soluble in both oil and water. Pylam is reported to specialize in small quantity orders of dyes and colors for every purpose and free samples for testing purposes are provided. The company also recently published a bulletin on its "Pyla-Tel Super Fluorescent Dyes" used to trace contamination sources in water supplies. Use of the product is described and prices are given.

—★—

Cornwell in Monsanto Post

Franklin J. Cornwell has been appointed assistant to the vice-president of marketing of Monsanto Chemical Co., St. Louis, it was announced last month by John L. Gillis, vice-president. With Monsanto from 1953 to 1957, Mr. Cornwell was general manager of the carton division of Alton Box Board Co., St. Louis, before he rejoined the company in his new post.



Bacteriostatic and fungistatic material has been injected in handle of "Kleen-Puff" bowl mop by Zelinkoff Co., Wichita, Kans., rendering semiflexible plastic handle impervious to microbial attack.

build higher gloss and nonslip properties into your floor polishes...with A-C® Polyethylene

Now you can make longer-wearing industrial floor polishes that give a hard, dry-bright shine with improved antislip properties – by incorporating A-C Polyethylene in your formulations.

Polishes made with A-C Polyethylene resist damp mopping, too . . . rebuff to a high luster . . . won't yellow on build-up . . . and contain no catalysts detrimental to rubber.

Manufacturing advantages? A-C Polyethylene emulsifies well in existing systems . . . is compatible with acrylic and other resins . . . stops powdering of resins. Supply and prices are stable.

You can also use A-C Polyethylene to upgrade liquid or paste polishes for shoes, furniture and cars. *Ninety per cent of all home floor polishes now contain polyethylene!*

Free samples and technical literature are readily available. Just write us at the address below!

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SEMET-SOLVAY PETROCHEMICAL DIVISION

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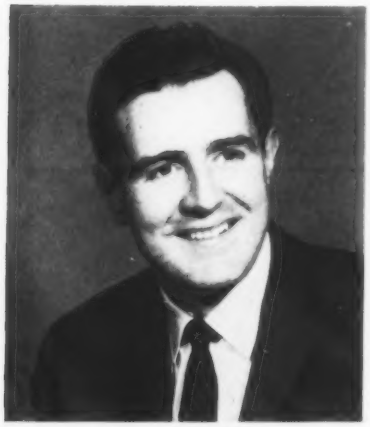
National Distribution • Warehousing in Principal Cities

Collins Joins Davies-Young

Appointment of James A. Collins as sales promotional representative for Davies-Young Soap



James A. Collins

Co., Dayton, O., was announced March 30 by R. H. Gildner, sales manager. Prior to joining Davies-Young Mr. Sollins attended Minnesota State College and served with the Air Force. In his new post he will promote sale of the company's "Buckeye" line through authorized dealers in eastern Massachusetts, New Hampshire, Vermont and Maine.

★

New Folder on CSMA

A four-page illustrated, colored folder recently issued by the Chemical Specialties Manufacturers Association, Inc., 50 East 41st St., New York 17, explains the workings of the association and the ways it serves its members. CSMA's organization, activities, and publications are described as well as the qualifications for membership.

★

Houchin Now Eastwood Div.

Benjamin Eastwood Co. of Paterson, N. J., has acquired the business of Houchin Machinery Co., which will henceforth be operated as Houchin Soap Machinery Division of the Benjamin Eastwood Co. Houchin's drawings, patterns, engineering data, etc. have been moved to the Eastwood plant at 300 Straight Street, Paterson, it was announced late last month by J. P. Garvey, president.

"Eastwood was founded in 1872 and we have conducted a most satisfactory relationship with it for almost fifty years", Mr. Garvey wrote in a letter to Houchin customers. ". . . it has been our principal supplier of castings. Furthermore, it has at various times completely manufactured much of our standard equipment particularly when we have been pressed for extra speedy deliveries both domestic and foreign."

★

John Stapp Dies

John A. Stapp, Jr., 38, chief technical service representative for fluids in the silicones division of Union Carbide Corp., Tonawanda, N.Y., died at his home in that city on Feb. 18. Mr. Stapp had been with Union Carbide since 1948 and was engaged in silicones research and development work.

Givaudan Office Moves

The Chicago office of Givaudan-Delawanna, Inc., New York, and its associate companies, Givaudan Flavors, Inc., and Sindar Corp., moved to new quarters early this month at 6778 Northwest Highway, Chicago 31. New telephone number is NEwcastle 1-9090.

★

Am. Potash Advances Jonas

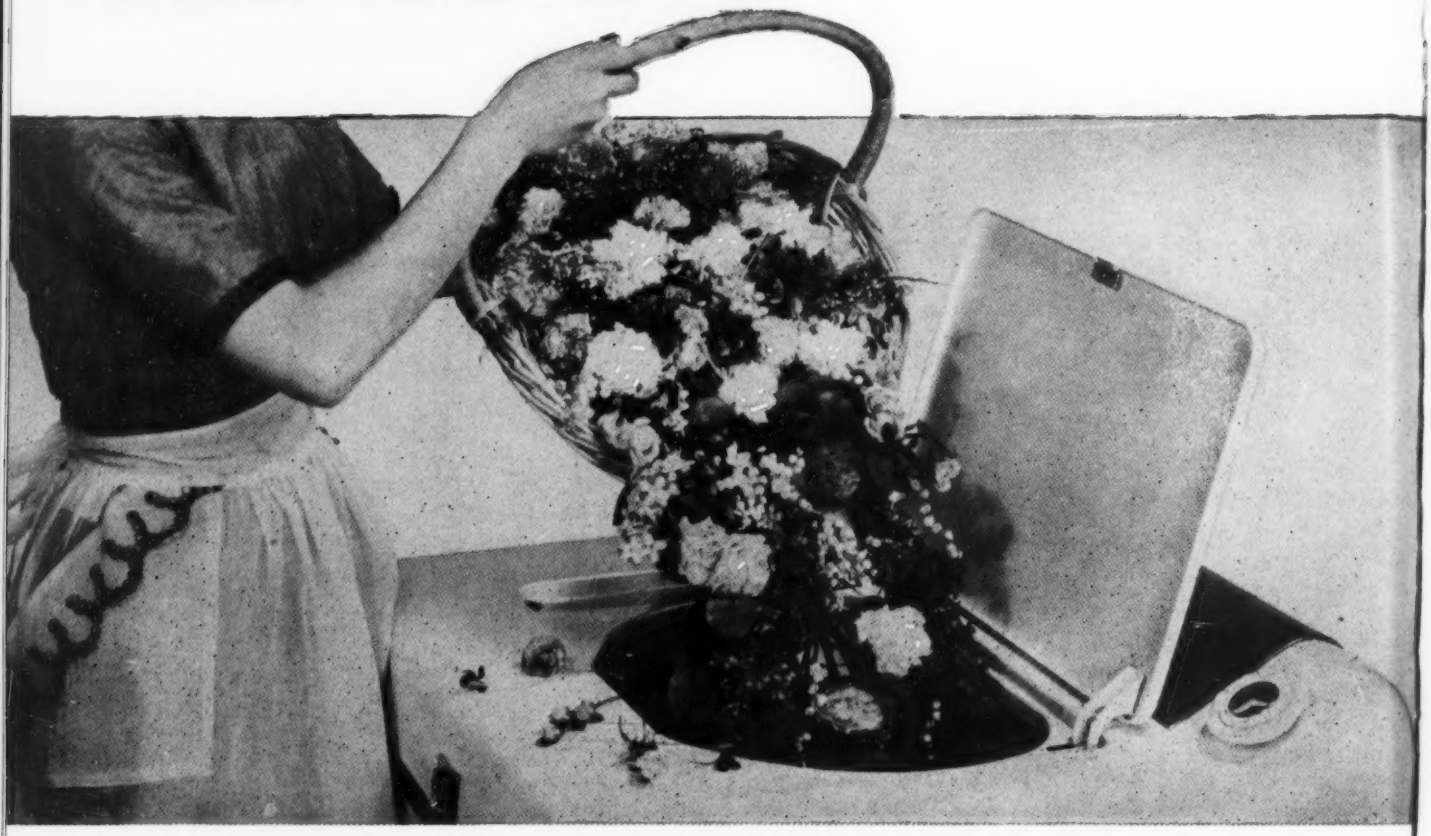
American Potash & Chemical Corp., Los Angeles, has advanced T. A. Jonas to manager of its Washington office. Formerly Washington representative for the firm Mr. Jonas will maintain local business contacts for the company's National Northern Division in addition to representing American Potash with governmental agencies. Mr. Jonas replaces J. S. Murray who resigned.

Special sales meeting was held by Firmenich, Inc., New York, to introduce its representatives to new associates in the Glidden Co., Minneapolis. Agreement early this year made Firmenich exclusive distributor for most aromatic products of Glidden's organic chemical division. In top picture, left to right: Charles C. Bryan, Firmenich president; W. D. Stallcup and R. L. Webb of Glidden; Clive N. Ross, Firmenich west coast manager; J. B. de Bauernfeind, Glidden; and Charles H. Milton, Firmenich. Bottom picture is a group shot of the meeting at which sales and distribution of the Glidden aromatics were discussed.

There's fragrance in her washer!

Your detergent scented with

Givaudan TERGESCENTS ®



Give your powdered household detergents the odor-appeal that builds sales, wins consumer loyalty... with Tergescents, the fragrances specially developed for that purpose!

Powerful and highly appealing, these inexpensive perfumes are effective at ratios of from 1/20 to 2/10 of 1%—depending on your product's use.

We shall be glad to recommend the specific type of Tergescent ideally suited to your household detergent.

Better perfume materials through constant research and creative ability

GIVAUDAN-DELAWANNA, INC.
321 West 44th Street • New York 36, N.Y.

Goodrich New President of Stanley Home

FOSTER E. Goodrich was elected president and director of sales of Stanley Home Products, Inc., Westfield, Mass., at the annual meeting of the firm's board of directors, March 24. At the same time, Catherine L. O'Brien, president and cofounder, was elected chairman of the board. Mr. Goodrich had served as first vice-president and director of sales since 1958.

Foster E. Goodrich

Miss Catherine O'Brien

The new president started with Stanley as a dealer in 1932 while still at Colgate University, from which he was graduated in 1933. He became district manager in 1934, branch sales manager in 1936, area sales manager in 1938, and region sales manager in 1942.

During World War II, Mr. Goodrich served in the Pacific as aerographer in the U. S. Navy. After the war he returned to Stanley as region sales manager and in 1949 was advanced to assistant sales manager. Two years later he became promotion sales manager and general sales manager in 1953. In 1957 he was appointed vice-president in charge of sales. Mr. Goodrich has been a member of the board of directors since 1954.

Miss O'Brien, the new chairman whom Mr. Goodrich succeeds as president, has served Stanley since 1931. She has successively been general manager, treasurer, and executive vice-president. She was elected president of the company in 1951.

Other officers and directors re-elected at the annual meeting include: I. Kaplinsky, vice-president and treasurer; William H. Naylor, vice-president in charge of marketing and merchandizing; J. W. Palmer, vice-president in charge of manufacturing; Homer G. Perkins, corporate secretary; A. W. Elzerman, general sales manager and director; R. F. Lally, director and general manager, international division, and Evelyn Caswell Russell, director.

Two board members are retiring: Hubert L. Worrell, former region sales manager and senior sales counselor, and Mary G. Furey, assistant secretary and chief attorney of the company since 1937.

H. A. Cunningham was re-elected assistant treasurer and Stephen C. Reville Jr., was newly elected as assistant corporate secretary. He joined Stanley's legal staff in 1954.

Stanley Home Products and its subsidiaries manufacture a line of more than 250 household and personal specialties. The products are bought by dealers in the United States and Puerto Rico, who resell them through the party plan. In 1959 consolidated sales of Stanley Home Products and its subsidiary companies amounted to $55,911,943, net earnings to $2,051,594. The company has manufacturing facilities in Easthampton, Mass., Mexico City (Stanhome de Mexico S. A.) and London, Ont. (Stanley Home Products of Canada, Ltd.).

★

Prof. Mark Honored

A testimonial luncheon in honor of Professor Herman Francis Mark, director of polymer research at the Polytechnic Institute of Brooklyn, was held March 12 under the chairmanship of Maurycy Bloch, Western Petrochemical Corp. Dr. Mark is a director of Western Petrochemical. The luncheon marked completion and presentation of a bust of Dr. Mark. The work is first to be completed in a series of busts of the most famous polymer scientists in the United States, Germany, Italy, and The Soviet Union. Commissioned to execute sculptures is Miss Jimilu Mason, of Washington, D. C.

The sculpture was presented by Dr. Turner A. Alfrey, Jr., of Dow Chemical Co. and accepted on behalf of Polytechnic Institute of Brooklyn by Professor Charles Overberger. An address honoring Dr. Mark was delivered by Professor J. Sterling Livingstone of Harvard University.

Thomas Miserendino, who joined Flam-Haft Laboratories, Inc., New York, recently, is vice-president and perfumer, responsible for the perfume and flavor departments. Formerly vice-president and chief perfumer for the related firms of Perfumery Associates, Inc., and Ph. Chaleyer, Inc., New York, Mr. Miserendino has been in the perfume industry since 1939.

AHA Test Methods

A "Workbook of Test Methods Used in Connection with American Hotel Association Minimum Performance Specifications", a 70-page mimeograph of the AHA, was reproduced recently by the Chemical Specialties Manufacturers Assn. 50 East 41st Street, New York 17, N. Y. Foster D. Snell, Inc., New York, are suppliers of comparison standards and test materials stipulated in the manual assisted in the preparation of the brochure. The methods cover a wide range of household chemical specialties.

—★—

Cos. Women to Hear Kintner

Earl W. Kintner, chairman of the Federal Trade Commission, will be guest speaker at the Sixth annual Men's Day luncheon of Cosmetic Career Women, Inc., New York, on Apr. 19 at the Waldorf Astoria Hotel. Mr. Kintner's talk is "Truth in Cosmetic Advertising."

Ungerer Honors Two

Ivon H. Budd and Wm. H. Dunney, Jr., were honored at a testimonial luncheon last month

Ivon H. Budd

and received engraved gold wrist watches in recognition of 25 years with Ungerer & Co., New York essential oil and aromatic chemicals firm. The presentation was made by Frederick H. Ungerer, chairman of the board at the luncheon which was given by the firm's 25-year club and attended by Ungerer officers.

Mr. Budd is a director and first vice-president of Ungerer. Active as a perfumer for over 25 years, Mr. Dunney is director of perfume laboratories and a vice-president of the firm. He came to Ungerer with his father, Wm. H. Dunney, Sr., and Mr. Budd, when Budd Aromatic Chemical Co. merged with Ungerer.

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Those who have used previous editions of the HANDBOOK by Mallis undoubtedly will want this new up-to-the-minute standard reference book which should be in the library of every pest control operator, insecticide manufacturer and marketer, entomologist, chemist and others interested in modern methods and materials of pest control. It is recommended by educators as a text book in various college courses in entomology.

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DuPont Advances Wilhoyte

Howard J. Wilhoyte, Jr., was advanced last month to supervisor in the development and service group of the industrial and biochemicals department of E. I. du Pont de Nemours and Co., Wilmington, Del. In his new post, Mr. Wilhoyte is responsible for the organization and implementation of programs aimed at obtaining new markets for products in development and established products. He currently is program chairman of the Waxes and Floor Finishes Division of the Chemical Specialties Manufacturers Assn.

Howard J. Wilhoyte, Jr.

—★—

TGA Scientific Meeting

The 31st meeting of the Scientific Section of the Toilet Goods Association will be held May 11 at the Waldorf Astoria Hotel, New York. The all day technical program will consist of seven papers. Just prior to adjournment for luncheon a vice-chairman will be elected. The 1960 CIBS award will be presented at the group luncheon.

Papers and their authors include the following: "Program for Dermal Toxicity Testing", by Bernard Davidow, director of pharmacology, New Drug Institute; "The Rationale and Interpretation of Toxicity Tests", by Bernard Oser, Food and Drug Research Laboratories, Inc.; "A Review of Product Development Problems Under the Federal Food, Drug, and Cosmetic Act", by Lloyd W. Hazelton and John R. Elsea, Hazelton Laboratories, Falls Church, Va.; "Toxicological Aspects of Certain Types of Cosmetics", by Dr. A. J. Lehman, director, Division of Pharmacology, Bureau of Biological and Physical Sciences, FDA; "Usefulness of Rheology in Cosmetics", by Herbert Heinrich and John Clements, Coty Inc.; "Organoleptic Quality and the Stereochemical Theory of Olfaction", by James W. Johnston, Jr., Georgetown University, School of Medicine and Dentistry; and "The Percutaneous Absorption of Estrogen", by Edward J. Masters, director of product research and development, Helena Rubinstein.

The meeting is, as in past years, restricted to member companies' representatives. There is no registration fee, but batches must be requested in advance. Luncheon tickets reserved in advance are $12.50 per person, $15.00 if purchased at the meeting.

—★—

New V.P. at Phila. Quartz

Monroe J. Blanchard was elected last month a director and vice-president of manufacturing for Philadelphia Quartz Co., Philadelphia, manufacturer of soluble silicates. With the company since 1915, Mr. Blanchard served successively as plant superintendent, production manager, and manufacturing department manager.

—★—

Westvaco Changes Name

The name of the Westvaco Division of Food Machinery & Chemical Corp., New York, has been changed to the Chlor-Alkali and Mineral Products Divisions. The name change became effective April 1, and also applies to brand identifications.

Robert Elias was recently appointed sales manager for Felton Chemical Co., Brooklyn, N. Y. In his new post, he is in charge of all domestic sales activities of the company. Mr. Elias has been with Felton for many years.

Velsicol Appoints Three

John F. Kirk was named executive vice-president last month of Velsicol Chemical Corp., Chicago, manufacturer of industrial and agricultural chemicals. Mr. Kirk was vice-president since 1951 and has been a director since 1958. Also appointed were Bernard H. Lorant as vice-president of research and A. B. Chadwick as vice-president of manufacturing and engineering. Mr. Lorant, formerly assistant to the president in charge of research, also was elected a director. Mr. Chadwick was previously director of manufacturing and engineering.

John F. Kirk

—★—

LaTorre in Polyvinyl Post

Augustine LaTorre recently joined the polymer development research group of the research laboratory staff of Polyvinyl Chemicals, Inc., Peabody, Mass. Previously Mr. LaTorre was on the laboratory staff of the Dewey & Almy division of Grace Chemical Co., Memphis, Tenn.

—★—

Hood Dedicates New Plant

Hood Chemical Co., Kansas City, Mo., recently dedicated a new plant in Medina, O., for the manufacture of liquid bleach, starch, ammonia, bluing and household cleaners. The new plant is located on West Smith Rd. in Medina and serves grocery outlets in a 300 mile area including Akron, Cleveland, Detroit, Pitts-

burgh, and Indianapolis. At the dedication ceremony were Hood Chemical, Medina, and industrial development group officials.

Labeling Hearing

(*From Page 95*)

This, FDA and industry feel would require an excessively elaborate system of testing and evaluation. CSMA believes that the regulatory power vested in the Secretary of HEW is preferable to a rigid scale of degrees of toxicity.

The American Medical Association's suggestion to widen the scope of the bill to protect workers in non-manufacturing establishments was opposed by Chester L. French of Mallinckrodt Chemical Works, who testified on behalf of the Manufacturing Chemists' Association. Mr. French is chairman of MCA's Labels and Precautionary Information Committee. He expressed MCA's belief that the Federal Hazardous Substances Labeling legislation will be of definite benefit to the protection of public health, will aid the States in their wise handling of the prolems, and assist the chemical industry in the orderly marketing of its products.

Walter H. Johnson, staff engineer of the Liquefied Petroleum Gas Association, testified on behalf of this group, which supports the legislation but seeks inclusion in the amendments to H. R. 5260 an exemption of liquefied petroleum gas fuel. Such an amendment is part of the current version of S. 1283 and reads as follows: "The term hazardous substance shall not include substances stored and intended for use as fuel in a heating, cooking, or refrigeration system."

A statement filed by Roy W. Peet, manager of the Association of American Soap & Glycerine Producers, supported passage of the bill "provided it incorporates the amendments referred to by Dr. Emil G. Klarmann and which the Senate Subcommittee recommended in the companion bill S-1283."★★

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New Detergent Alkylate

(*From Page 53*)

tion results being equal, a low bromine number suggests that the detergent alkylate will give sulfonates of good color and low oil content. In sulfur trioxide sulfonation, sulfonate color has been shown to be directly related to unsaturated content. Since "Alkane 60" contains only negligible amounts of unsaturated compounds, it will lend itself well to both types of sulfonation. Its use will give improved foam and detergency without loss in the quality of the sulfonate.

Many home laundering detergents contain foam boosters and stabilizers. Such additives are considerably more expensive than the alkylbenzene sulfonate. "Alkane

60" minimizes the need for foam boosters. Standard laboratory tests, carried out by California Research, show that products based on the alkylate and containing no foam additives perform as well as dodecylbenzene based products with foam boosters. Thus, the formulator can replace the foam booster with lower priced "Alkane 60."

Detergency tests with heavy duty detergents based on the new alkylate without foam boosting additives showed them to equal the performance of dodecylbenzene based formulations with foam additives.

The new product's processing characteristics in both batch and sulfonation systems were tested by Oronite. Despite increased molecular weight the new alkylate was found to be processed as easily as conventional detergent alkylates. Manufacturers will therefore not need any ne wequipment or modified processing techniques to handle "Alkane 60" based detergents.

Further improvements in detergent raw materials will depend largely upon suggestions by detergent manufacturers based on their close contact with the consuming industries and the public. The Standard Oil team through the efforts of Oronite and California Research is continuously searching for new raw materials and low cost processing techniques to serve the needs of the growing detergent industry.★★

Aerosol Insecticides

(*From Page* 140)

five minute knockdown of house flies.

These formulas were tested further against the Japanese beetle, the American cockroach, the northern house mosquito, and the lesser mealworm. The practical tests against mosquitoes were conducted in railroad boxcars of 3,900-cubic foot capacity. The results given in Table 3 indicate that the medium-pressure formulas were slightly less effective against Japanese beetles and that G-1152 (3% DDT) was more effective than G-1029 (2% DDT). The medium-pressure formulas controlled mosquitoes in large spaces as well as the high-pressure formulas. Only the medium-pressure formulas were tested against the lesser mealworm, and the two formulas caused equal kills.

A low-pressure (38 p.s.i. gage) aerosol, G-1193 (2% pyrethrum extract (20%), 3% DDT, 5% cyclohexanone, 3% deodorized kerosene, 2% lubricating oil, 85% propellant 11 and 12 (1:1), suggested for use in aircraft by the World Health Organization, was compared with G-1152 against house flies and *Anopheles quadrimaculatus* mosquitoes. Table 4 shows that the low-pressure aerosol was less effective in knockdown of both insects and slightly less effective in kill of house flies.

(*Continued on following page*)

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These experiments showed that the medium-pressure aerosols, G-1029 and G-1152, performed about as well as the high-pressure formulas, G-382 and G-651. As a result they were released by the Department of Agriculture in 1955 (Haller 1955), and approved by the U. S. Public Health Service (Spencer 1955) for use on aircraft. Only the two medium-pressure aerosols can be used in lightweight 2P containers, which are required to stand heating to 160° F. without evidence of leakage, distortion, or other defect. These formulas may be used also in the regular ICC-9, ICC-40, or 4B240ET containers (Interstate Commerce Commission Regulations. 1957. Secs. 78.63 and 78.66.).

The G-1029 formula was used during the summers of 1955 and 1956 for treating planes within the Japanese beetle regulated area, having been duly authorized for use against this species in addition to G-382 and G-651 (Popham 1954). G-1152 has been used in the Japanese beetle work since the summer of 1957 (Burgess 1957).

Table 4. Comparison of effectiveness against house flies and mosquitoes of low- and medium-pressure aerosols.

Formula	Dosage (G./1000 Cu. Ft.)	Percent Knockdown in—			Percent Kill in 1 Day
		2½ Minutes	5 Minutes	10 Minutes	
		House Flies (10 tests)			
G-1193	2.78	—	18	36	89
G-1152	2.92	—	51	71	95
		Common Malaria Mosquito (5 tests)			
G-1193	2.78	6	29	—	100
G-1152	3.01	10	61	—	100

With the advent of the medium-pressure aerosols a biological test method has been designed for evaluating candidate formulas for use in aircraft. This method is a modification of the Chemical Specialties Manufacturers Association Aerosol Test Method for Flying Insects, which itself was patterned after the Peet-Grady Method for the evaluation of sprays. The most significant modification is the employment of adult mosquitoes as well as house flies as test insects. Either of two standards may be used. These standards are medium-pressure aircraft aerosols G-1029 and G-1152, described earlier in this paper. Both are available in 2P containers equipped with valves that meet the specification established for this equipment as described in the U. S. Department of Agriculture statement of June 27, 1955.

The rearing and handling of the house flies, the testing chamber, and the test procedure are the same as for the Chemical Specialties Manufacturers Association method with the following modifications: The test dosage is reduced from 3.0 to 2.5 grams per 1000 cubic feet (in a Peet-Grady chamber this is 0.54 ± 0.108 gram). The exposure time is reduced from 15 to 10 minutes. Knockdown counts are made after five and 10 minutes, at which time the insects are collected. The up insects are placed in the same cage with the down insects and mortality counts are made in 24 hours. The Aerosol Test Knockdown Mortality (mortality count on down flies only) is eliminated. A candidate aerosol meets the standard if knockdown and mortality are equal to or greater than those obtained with the standard, no tolerances being allowed. An evaluation consists of 10 paired tests with the unknown and the standard.

In the tests against mosquitoes the exposure time is reduced to five minutes and the rate of exhaust is about half that used in the tests with house flies. Any suitable apparatus for collecting the knocked down and up insects may

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be used. *Anopheles quadrimaculatus* or a species of similar resistance is the preferred test species, since the more susceptible *Aedes aegypti* gives too high mortalities; however, any species that can be reared in sufficient numbers may be used. Twenty-four hours after exposure the dead and live mosquitoes are sexed, and the percent mortality of females is obtained. The aerosol meets the standard if the total knockdown and the percent mortality of females are equal to those obtained with the standard. An idea of the performance that the standards can be expected to give is shown in Table 2. This method has been used successfully for the evaluation of candidate aircraft aerosols.

Summary

Two medium-pressure (55 p.s.i. at 70° F.) aerosols G-1029 and G-1152, have been developed for use on aircraft. They can be used in inexpensive, lightweight 2P containers, which are required to stand heating to 160° F. without evidence of leakage, distortion or other defect. They may also be used in the regular ICC-9, ICC-40 and 4B240ET containers. It is not permissible to use the older high-pressure formulas, G-382 and G-651, in the 2P containers. Results of tests against the house fly, three species of mosquitoes, American cockroach, Japanese beetle, and the lesser mealworm indicate that the 55 p.s.i. formulas are about as effective as the high-pressure formulas, and they have been approved and are now in common use on aircraft. A method for biological evaluation against the house fly and mosquitoes of aerosols for use on aircraft is described.

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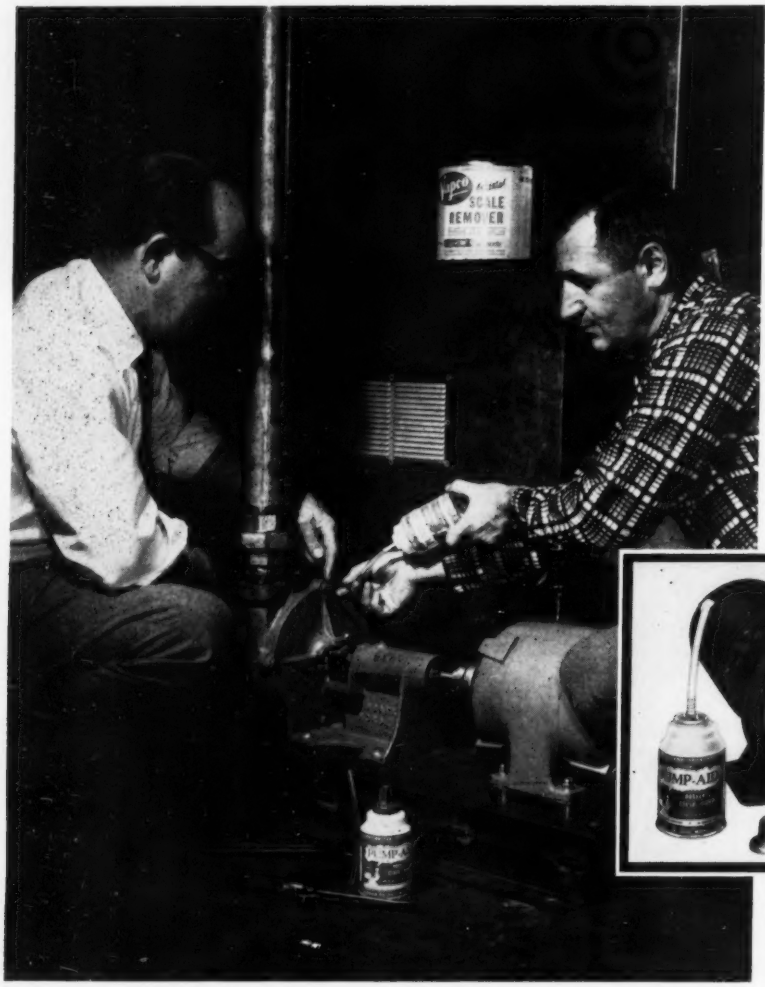

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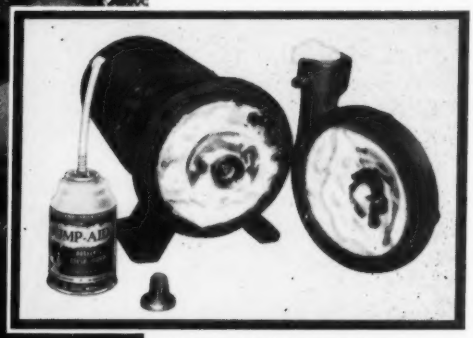

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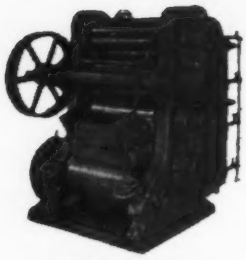

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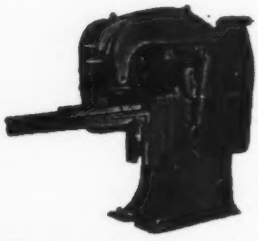

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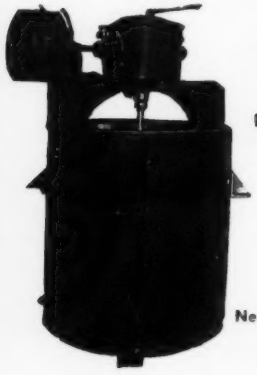

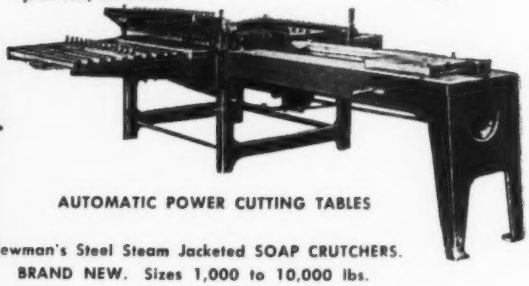

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Salesman or Mfrs. Agents: Major private label manufacturer of floor finishing materials wants salesmen or manufacturers' representatives for several openings. Address Box 427, c/o *Soap*.

Chemist: Wanted by large manufacturer located in the South. Man with experience in floor waxes, liquid soaps, cleansers and other maintenance products. Exceptionally fine opportunity, excellent working and living conditions. Give full details, experience, education, salary desired. Address Box 414, c/o *Soap*.

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Wanted: Jobbers and distributors for miniature guest soaps, wrapped and unwrapped. **Write** for samples and prices to Box 428, c/o *Soap*.

Mfrs. Representative: Wanted for south, southwest for chemical specialties covering retail outlets, industrial and institutions. Address Box 432, c/o *Soap*.

Chemist Wanted: With a thorough background in emulsion waxes for one of the fastest growing chemical specialty houses in the middle west. Excellent salary plus profit sharing and other company paid benefits immediately plus the opportunity and freedom to develop a wide range of ideas. The right man will be in on the ground floor of a dynamic growth situation. Address Box 416, c/o *Soap*.

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Research Chemist: Ph.D., 27 years of versatile experience in organic and industrial chemistry, creative, specialized in synthesis of basic detergents, wetting and chelating agents, analysis and formulating of detergent compositions and cleaners. Foreign languages. Presently employed in New Jersey. Desires challenging position in research and development, preferably in surfactant field. Address Box 419, c/o *Soap*.

(*Turn to Page* 193)

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Wanted to Sell: Small chemical specialties plant located in fastest developing section of Texas. Address Box 431, c/o *Soap*.

Merge or Sell: Chemical specialty manufacturing company is for sale or will merge with reliable company. We manufacture automotive chemicals and some household chemical products. Replies held in strict confidence. Address Box 434, c/o *Soap*.

Now Available: Third edition HANDBOOK OF PEST CONTROL by Mallis. See pages 180 & 181.

Business Buy/Sell

Toronto, Canada: Medium size plant, making and selling waxes cleaners, floor machines, seals and sandpaper. Selling on account of age. Address Box 433, c/o *Soap*.

Partner or Sell: New York State corporation presently located on Florida's east coast, seeking active partner or outright sale. Interested in continuing in present operation if agreeable terms can be met. Investment of $8,000 to $10,000 required. Address Box 439, c/o *Soap*.

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For Sale: 3 and 4 roll granite steel roller mills. Plodders. Grinders. Chippers. Crutchers. Slabbers. Cutting tables. Kettles. Filter presses. Mixers. Sifters. Foot and power soap presses. Partial listing. We buy surplus equipment. Stein Equipment Co., 107 – 8th St.,, Bklyn. 15, N. Y.

For Sale: Bowen pilot T-304 SS spray dryers, Sharples #16V inconel soap centrifugals, Hope single piston stainless filler. Perry Equipment Corp., 1410 N. 6th St., Phila. 22, Pa.

For Sale: Full line new and used processing vats, pumps, coolers, homogenizers, fillers, etc. Send us your inquiries. Stuart W. Johnson & Co., Lake Geneva, Wis.

(*Turn to Page* 195)

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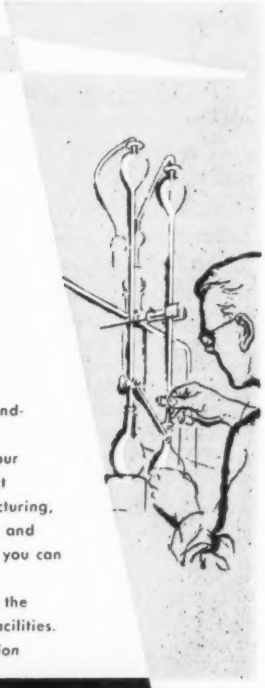

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For Sale: By I. E. Newman, 818 W. Superior, Chicago, Ill., CH-3-1425. Mixers. Marion-Munson, sizes 50# to 10,000# Crutchers—1,000-8,000#; Wrapper Type S; Auto Cutting Table; Bucket Elevators, Mills, Cutters, Crushers, Soap Equipment. Prices on request.

William Fillebrown Dies

William Y. Fillebrown, 66, retired manager of the Colgate-Palmolive Co. factory at Jeffersonville, Ind., died Mar. 5 in Summit, N. J. A resident of Woodstock, Vt., Mr. Fillebrown is survived by his wife, Phyllis.

Carsch to Roure-Dupont

Gustav Carsch was recently appointed technical service director for Roure-Dupont, Inc., New York, essential oils, aromatic chemicals and perfume bases firm. In the newly created position, Mr. Carsch coordinates the efforts of the company's laboratories with those of its customers' research and development departments. Most recently with the Toni Co., Chicago, as chief perfumer, Mr. Carsch also had been associated with Lanolin Plus, Inc., and Polak & Schwarz, Inc., in Chicago.

Gustav Carsch

★

Chicago Cos. Chemists Meet

Morris V. Shelanski, director of the Industrial Biology Research and Testing Laboratories, Inc., Philadelphia, was guest speaker at a meeting April 12 of the Chicago Chapter of the Society of Cosmetic Chemists. Dr. Shelanski spoke on toxicological testing of cosmetic products.

★

New Reynaud Sales Rep.

Mark Winter was recently appointed a sales representative for Reynaud, Ltd., Union City, N. J., producers of aromatic chemicals and perfume materials, and importers of essential oils. Mr. Winter works out of the firm's headquarters and calls on soap and chemical specialties manufacturers in the New York metropolitan area.

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W. H. Wheeler, right, president of Airkem, Inc., New York, offers his congratulations to Neil Woloshin, top salesman in recent national Airkem sales contest. New 1960 "Rambler" station wagon in which Mr. Woloshin sits was his "reward" for winning.

Reader Sees It

(*From Page* 39)

operator you arrive at the standard deviation, . . .should read, by *now* taking the square-root of each variance for each operator you arrive at the standard deviation,.

As you have already guessed, "the standard deviation is the square root of variance."

I trust you can publish this correction quickly before every statistician in the country is on my neck.

Eric Dudley Robinson,
Quality Control Department
Plough, Inc.
Memphis, Tenn.

If it is any consolation to Mr. Robinson, our proof reader is now wearing new, stronger glasses. —Ed.

—★—

Fries Anniversary

Editor:

We greatly appreciate the news item on the 106th anniversary of our company which was published on page 194 of the February issue of *Soap & Chemical Specialties*. A technical error was made for which we apologize. To be exact, Robert G. Fries, president of our company, is the son of Gus R. Fries who, together with his brother established their flavor business in 1854. After the death of Gus R. Fries, Robert and George separated themselves from that company and formed (around 1916) Fries & Fries Co.—still later establishing Fries & Fries, Inc. (1930).

Thus, the present Fries & Fries, Inc., is an outgrowth and continuation, by the sons of Gus R. Fries, of his business career, started in 1854.

To our knowledge, Fries & Fries, Inc., is the only company with any descendant of the brothers who comprised the original Fries firm. The Fries family has celebrated its 106th year—over three generations— in the manufacture of flavoring materials. More

recently they have added to our manufacturing and laboratory facilities and now offer a complete line of perfume compounds.

Robert G. Fries, President,
Fries & Fries, Inc.,
Cincinnati

Committee D-12

(*From Page* 157)

Abstracts, A. M. Schwartz, chairman, reported addition of 200 new literature references to its bibliography of analytical methods for surfactants.

Task groups of subcommittee T-5, Physical Testing, M. G. Kramer, Wyandotte Chemicals Co., chairman, turned in reports. Task group 1, Measurement of Soil Redeposition, A. R. Martin of Whirlpool, chairman, has developed a tentative method which it proposes to publish for information only. Task group 2, Measurement of Wetting Power, C. A. Gerardi of U. S. Testing, chairman, reported that information gathered to date is inconclusive. A method for measurement of reflectance of test fabrics has been evolved by task group 3 and is ready for distribution to cooperators.

Task group 4 is concerned with the measurement of build up, substantivity, stability to light and bleaches of optical brighteners in detergents. Chairman is Margaret Furry, Institute of Home Economics, U. S. Department of Agriculture. Robert Johnson of Whirlpool Corp. was named chairman of a task group on Evaluation of Syndets for Machine Dishwashing. A bibliography on Primary Soil Deposition has been completed by the task group concerned with this subject.

At the business meeting Committee D-12 reelected its officers for another two year term: Jay C. Harris, chairman, who has headed the group in that capacity since 1950; E. W. Blank, vice-chairman, who was appointed last year to succeed W. H. Koch; and H. R. Suter of Wyandotte, secretary, who served in that post from 1950 to 1955, and again since 1958.

M. G. Kramer of Wyandotte has resigned his chairmanship of subcommittee T-5, Physical Testing. He will be succeeded by J. L. Darragh of California Research Corp. The D-12 award committee for 1961 is headed by C. H. Bayley of the National Research Council of Canada. The D-12 committee for the ASTM award of merit is headed by R. E. Wolfrom of Rohm & Haas Co.

Reelected for two year terms by ASTM Committee D-12 on Soap and Other Detergents, at recent annual meeting in New York, were, l. to r.: E. W. Blank, Colgate-Palmolive Co., New York, vice-chairman; Jay C. Harris, Monsanto Chemical Co., Dayton, O., chairman, and H. R. Suter, Wyandotte Chemicals Corp., Wyandotte, Mich., secretary.

ASK THE MEN WHO

KNOW

MM&R chemists and perfumers, under the direction of Arthur H. Downey, vice president in charge of research and technology (left in photograph), have helped to solve some of the most difficult perfume problems of manufacturers of chemical specialties.

If you have a perfume or re-odorizing problem, we suggest that you discuss it with our technical staff, in complete confidence. They will be glad to help you to increase the sales appeal of your products with distinctive fragrances that capture attention in today's competitive market.

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COMING MEETINGS

American Chemical Society, national meeting, Cleveland, April 5-14.

American Oil Chemists Society spring meeting, Baker Hotel, Dallas, April 4-6, 1960. 1960 fall meeting, New Yorker Hotel, New York, Oct. 17-19.

Association of American Soap & Glycerine Producers, 34th annual convention, Waldorf-Astoria Hotel, New York, Jan. 25, 26 and 27, 1961.

American Society of Perfumers, sixth annual open symposium, Essex House Hotel, New York, April 28.

Canadian Manufacturers of Chemical Specialties Association, 3rd annual convention, Queen Elizabeth Hotel, Montreal, Oct. 24-26.

Chemical Specialties Manufacturers Association, 46th midyear meeting, Drake Hotel, Chicago, May 16-18; 47th annual meeting, Hollywood Beach Hotel, Hollywood, Fla., Dec. 3-9.

Chemical Specialties Manufacturers Association, first annual golf outing, June 16, Knollwood Country Club, White Plains, N. Y.

Drug, Chemical & Allied Trades Association, 70th annual meeting, Sagamore Hotel, Bolton Landing, N. Y., Sept. 15-18, 1960.

Federation of European Aerosols Association, Duesseldorf, Germany, April 20-27.

Industrial & Building Sanitation-Maintenance Show and Conference, Sheraton-Cadillac Hotel, Detroit, Oct. 25-28.

International Congress of Surface Activity, Cologne, Germany, Sept. 12-17.

Manufacturing Chemists' Assn., 88th annual meeting, The Greenbrier, White Sulphur Springs, W. Va., June 9-11.

National Sanitary Supply Assn. 37th annual convention, Fontainebleau Hotel, Miami, Fla., May 22-25, 1960.

Packaging Machinery Manufacturers Institute, (PMMI) fourth annual show, Cobo Hall, Detroit, Nov. 7-10, 1961.

Society of Cosmetic Chemists spring meeting, May 12, Hotel Biltmore, New York; New York Chapter, New Yorker Hotel, April 20.

Synthetic Organic Chemical Manufacturers Association, monthly luncheon meeting, Roosevelt Hotel, New York, April 12; annual spring outing, Shawnee Inn, Shawnee, Pa., May 11-13; annual meeting, Roosevelt Hotel, New York, Dec. 8.

Toilet Goods Association, 25th annual meeting, Poland Springs House, Poland Springs, Me., June 27-29, 1960. Scientific Section, Waldorf-Astoria Hotel, New York, May 11, 1960.

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* * * * *

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* * * * *

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Tale Ends

THE "barbers of the United States," says the daily press, have chosen Neil McElroy, chairman of P & G, as one of the ten best groomed men in the country. Now, good friends, that is an honor which we feel certain the Big Fellow will undoubtedly appreciate, almost on a par with serving as Secretary of Defense. It's not every day that a fellow gets tapped by the barbers of America for such an honor. Any kidding in and around the board rooms of P & G in Cincinnati probably stems from jealousy.

* * * * *

Well, it's here men! A shark repellent! Put out by Par Industries of Los Angeles. It's an aerosol and is carried by skin divers and others who fool around in the water where sharks hang out. When a shark comes after you, you point the aerosol nozzle toward the shark and press the button in short spurts, meanwhile retreating toward land in as dignified manner as possible. The shark, they say, doesn't like the smell of the stuff and takes it on the lam. Tests in Hawaii and Florida show the repellent works against barracuda as well as sharks. Insect repellents, dog repellents, deer repellent,—now shark repellent. Ah, science!

* * * * *

One bright spot in the two-day blizzard that hit New York, and particularly Long Island, last month was the discovery of a useful although not-so-new aerosol product. "Slikote," marketed by Speco, Inc., Cleveland, is a silicone spray for use on snow shovels and ploughs. From personal experience we can vouch that the product really works and lives up to its claim, " . . . makes snow removal easy." Even wet snow slides off shovels coated with the slippery silicone spray.

* * * * *

Speaking of aerosols . . . our local shoe repair man has some advice on the best way to use pressure packaged shoe polishes. Shine shoes with regular shoe polish, buff well to get a good shine, then spray with the aerosol polish. Shoes given this treatment will look well shined for a week, this expert says.

* * * * *

N. I. Malmstrom & Co. of Brooklyn and Newark, N. J., producers of lanolin specialties announce the establishment of a branch warehouse in Limerick, Ireland. Why Ireland? Ivar Malmstrom head of the company did not say, but he did tell us about a nice personal chat he had with President Eamon de Valera while in Ireland. The address of the new warehouse is 23 Rutland St., Limerick, and Kevin Bradshaw is the manager. Next thing we know, Reilly Tar & Chemical will be opening up a branch in Sweden!

* * * * *

A mechanic in Denver brought home a six-bar economy pack of soap recently at a cost of 43 cents. The soap was full of money and nobody knows how it got there. The first bar used gave up 45 cents. And so far, $1.61 has been gleaned from the soap. Ten year old David Snow, son of the purchaser, is now reputed to be the cleanest kid in Denver, the hope of cash overcoming the normal aversion to too much cleanliness. The supermarket manager where the soap was bought was astounded by this cash bonanza, denied it was a promotion stunt.

* * * * *

A TV "channel changing aerosol" was recently reported from a Bay Shore, N. Y. hospital. A patient reported that when he operated a can of "Marvel Floral Air Deodorant" near his remote controlled TV set, the machine switched channels. Soon, hospital personnel, fellow patients and others had used two full cans of the aerosol deodorant, and watched in amusement as the set switched channels with each hiss. "Probable scientific explanation": The hiss of the product escaping through the valve approximated the frequency used by the electronic channel changing device used to activate the remote control gadget in the TV set.

* * * * *

It was fun in the sun for Ray Boedecker and his wife during mid-March. Ray is with the associated products division of Colgate-Palmolive Co. in New York. He and spouse left NYC by ship March 11 for Nassau in the Bahamas. The Boedeckers spent two weeks at Nassau soaking up the sun before sailing back to New York on March 25.

* * * * *

Got any excess flies, bees or grasshoppers to sell? Chance Vought Aircraft, Inc., is doing some debugging research on airplane windshields at its Dallas, Texas, laboratory. But they are having trouble getting enough bugs. It seems that the squashed bodies of insects collect on high-speed airplane windshields during the important seconds just after take-off. And the pilots can't see too well on account of the splattered bugs. Fussy fellows, these pilots. And Vought is doing research in a big wind tunnel trying to solve the problem.

* * * * *

A new angle for selling toilet flushing chemicals came to light recently. A sharp cookie by the name of Harry Lovell out near Painesville, Ohio, posed as a state health inspector and sold toilet flush to a lot of unsuspecting home owners for what he said was a "state required" chemical for flushing toilets. He is reputed to have collected as much as $30 from some home owners who were in fear of the law. They say he sold an awful lot of chemical before officials caught up with him. Mr. Lovell is now residing in the Ohio State Penitentiary.

* * * * *

Soap sculpture is coming back into vogue, they tell us. Some years ago, it was really a popular sport, carving things out of white soap. But the statues used to shrink and didn't keep too well. Now, the Shellac Information Bureau suggests putting on two thin coats of fresh white shellac to preserve these works of art for posterity.

New "Swim Safe" shark repellent of Par Industries, Inc., Los Angeles contract aerosol filler, is packaged in six-ounce Crown "Spratainer" can.

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